The Business Magazine for Makers & Users of Chemicals — Management, Research, Production, Marketing

CHEMICAL INDUSTRIES

Contents

Volume 47 — Number 6

NOVEMBER, 1940

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Published monthly, except twice in October, and entered as 2nd class matter Dec. 22, 1934, at the Post Office at New Haven, Conn., under the Act of March 3, 1879. Subscription, Domestic, $3 a year; Canadian and foreign, $4. Single copies, 35 cents. 522 Fifth Avenue, New York, N. Y., Murray Hill 2-7888; Chicago: 919 North Michigan Avenue, Whitehall 5842; London: 2 Cockspur Street, S. W. 1, Whitehall 6642 — Donald Hunter.

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Editorial

Feature Articles

Plant Operation and Management

New Chemicals for Industry

News of the Month in Review

Part 2: Statistical and Technical Data Section

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The Reader Writes—

The Hazard "Chemical Pioneer" Story

We experienced one disappointment as we eagerly went through the very readable and informative article concerning Rowland Hazard under "Chemical Pioneers" in your September issue. No mention was made of the fact that William B. Cogswell, Hazard's associate in founding the alkali industry, received his engineering education at Rensselaer Polytechnic Institute—an institution in which Mr. Cogswell was so interested that he directed that a trust fund amounting to several million dollars of his estate ultimately be given to it.

FLOYD TIFFT,
Publicity Director,
Rensselaer Polytechnic Institute,
Troy, N. Y.

Interested in New Products

As Director of Development and Applied Research, I find your publication of value from the point of view of new products in the chemical field which I usually try to adopt to the medicinal and pharmaceutical fields.

Personally, I would like to see a much greater proportion of the reading matter devoted to new products and specifications and possible applications.

The foreign literature digest by Singer is also much too short. Perhaps a page of short abstracts devoted to a different field in each issue might be worked out.

JOHN C. BIRD,
Department of Applied Research,
Hoffmann-LaRoche, Inc.,
Nutley, N. J.

Editorial Note: Thanks to Reader Bird for two excellent suggestions. Dr. Bird will find in the descriptions of over 500 "New Chemicals for Industry," in this special issue, what we believe to be the most comprehensive survey of new products ever given in any publication.

No Cause For Worry

Our subscription to CHEMICAL INDUSTRIES does not expire until January but I hope you will reserve for us the usual copy of the new "Buyer's Guide Book." The information given in this guide book is occasionally of great value and I should not like to risk loss of the new edition.

WILLIS A. BOUGHTON,
Assistant Director,
Chemical Laboratories,
Harvard University,
Cambridge, Mass.

Editorial Note: Every reader of "C. I." by now should have received the new edition containing 716 pages, the largest yet published. Readers will probably be interested to know that work started on the latest edition on February 1 and the first forms went to press on June 25. Over two hundred new chemicals were added to the current issue. While we cannot at this time disclose any details, we can definitely promise that next year's "guide" will contain several new startling innovations, improvements and additions that will, we feel sure, attract as much favorable comment as did the introduction of the Chemical Specialties Section and the Trade and Brand Name Listings three years ago. To maintain preeminence and leadership in any field requires consistent improvement. Constructive suggestions from the users of the "guide" are always most welcome.

Permission to Reprint

May we have your permission to reprint the article entitled "Sales Development—A New Technique" which appeared in a recent issue of your publication? *The Advertiser's Digest* is circulated among key men in the advertising and selling fields and we believe the article will be of real interest to them.

HENRY J. WINEBERG,
Editor, The Advertiser's Digest,
Chicago, Ill.

Editorial Note: We print the above letter simply as an introduction to the announcement that Authors Grupelli and Miskel of National Oil Products will contribute two more articles early in 1941. This series has attracted wide attention and has been reprinted in several publications.

Thank You, Mr. Nadin

It would be a good thing if every laboratory could receive your publication, including schools.

You are out to make a living—like all the rest of us—but from the scope of your work, service is indicated above profit.

JOE W. NADIN,
Paris, Ill.

"Shorts" From the Editor's Mail

S. G. Weber of Standard Brands' Cincinnati Manufacturing Branch suggests that we "include a brief abstract of each article to save reading time."

F. A. Keller of Wood Ridge, N. J., writes "I suggest more articles similar to those on sodium chlorite and Aerosol wetting agents in the September issue."

CALENDAR OF EVENTS

November

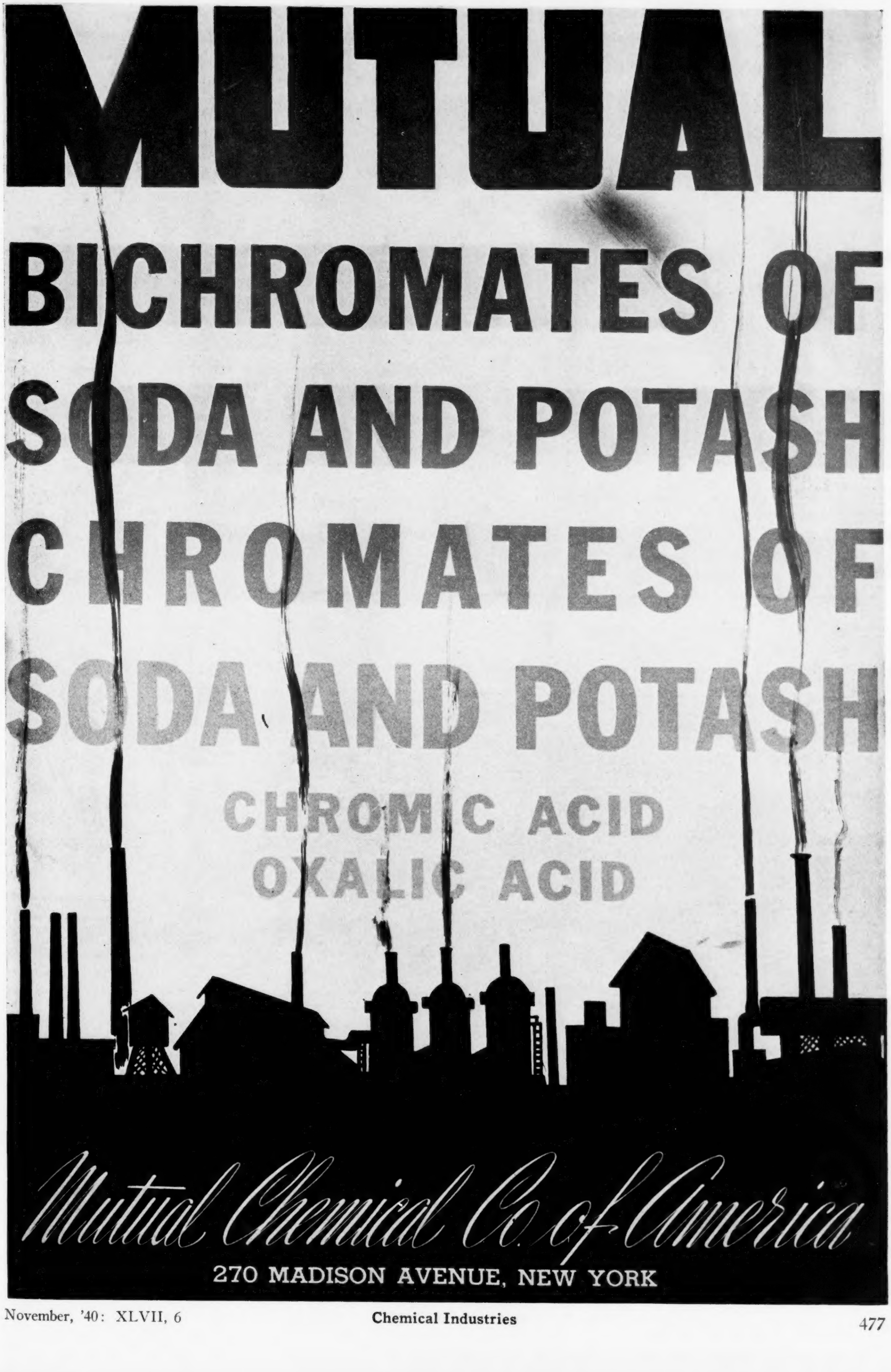
Nov. 11-15, American Bottlers of Carbonated Beverages, (National) A. B. C. B. Convention Exposition, Music Hall, Cincinnati, Ohio.
Nov. 11-15, American Petroleum Institute, Twenty-first Annual Meeting, Stevens Hotel, Chicago, Ill.
Nov. 12, Oil Trades Association of New York, Inc., Annual Banquet, Waldorf-Astoria, New York City.
Nov. 14-15, American Zinc Institute, Inc., The Galvanizers Committee, Fall Meeting, Lord Baltimore Hotel, Baltimore, Md.
Nov. 15, Society of Chemical Industry, New York City.
Nov. 18-20, The National Fertilizer Association, Annual Southern Meeting, Atlanta-Biltmore Hotel, Atlanta, Ga.
Nov. 22-23, American Physical Society, Chicago, Ill.
Nov. 28, Chicago Drug & Chemical Ass'n., Monthly Noon-Day Luncheon Meeting, Morrison Hotel, Chicago, Ill.

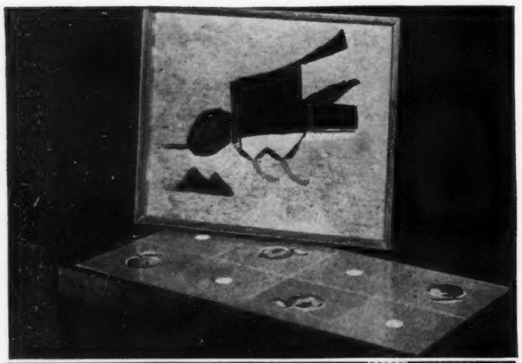
December

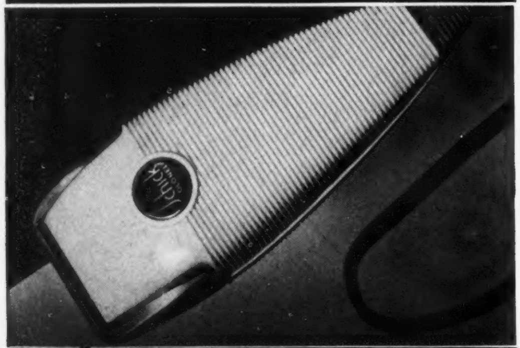
Dec. 2, Chicago Paint & Varnish Production Club, Electric Club, Civic Opera Building, Chicago, Ill.
Dec. 2-4, American Institute of Chemical Engineers, Thirty-third Annual Meeting, New Orleans, La.
Dec. 2-6, American Society of Mechanical Engineers, Annual Meeting, New York City.
Dec. 2-7, Fourteenth National Exposition of Power and Mechanical Engineering, Grand Central Palace, New York City.
Dec. 3-5, The American Society of Refrigerating Engineers, 36th Annual Meeting, Hotel Commodore, New York City.
Dec. 4, American Institute of Consulting Engineers, Monthly Luncheon Meeting, City Midday Club, 25 Broad St., New York City.
Dec. 5, Indianapolis Paint, Varnish & Lacquer Ass'n, Columbia Club, Indianapolis, Ind.
Dec. 6, Society of Chemical Industry, Joint Meeting with New York Section American Chemical Society, New York City.
Dec. 6, Baltimore Paint & Varnish Production Club, Baltimore, Md.
Dec. 8-10, National Ass'n. of Manufacturers, Annual Convention, Waldorf-Astoria Hotel, New York City.
Dec. 9-10, National Industrial Council, Waldorf-Astoria Hotel, New York City.
Dec. 11, American Standards Association, Annual Meeting, Hotel Astor, New York City.
Dec. 11, New Orleans Paint, Varnish & Lacquer Ass'n, New Orleans Athletic Club, New Orleans, La.
Dec. 11-13, Annual Meeting and Congress of American Industry of the National Association of Manufacturers, Waldorf-Astoria Hotel, New York City.
Dec. 11-15, National Chemical Exposition, Stevens Hotel, Chicago, Ill.
Dec. 19, Chicago Drug & Chemical Ass'n, Annual Christmas Stag, Morrison Hotel, Chicago, Ill.
Dec. 26, Chicago Drug & Chemical Ass'n, Monthly Noonday Luncheon, Morrison Hotel, Chicago, Ill.
Dec. 26-28, American Physical Society, Philadelphia, Pa.
Dec, American Pharmaceutical Manufacturers' Ass'n, Mid-Year Meeting, Washington, D. C.

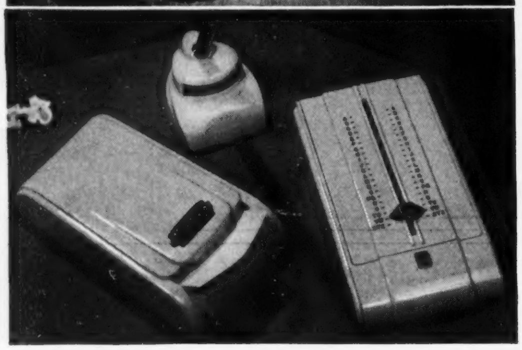
January

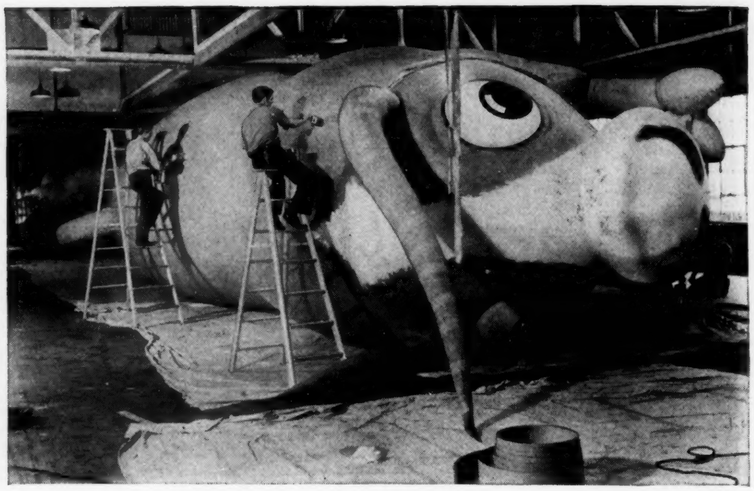
Jan. 10, 1941, American Chemical Society, N. Y. Section joint meeting with Society of Chemical Industry in charge, Perkin Medal, New York City.
Jan. 13-16, 1941, Refrigeration Service Engineers Society, 7th Annual Convention, Stevens Hotel, Chicago, Ill.


MUTUAL
BICHROMATES OF
SODA AND POTASH
CHROMATES OF
SODA AND POTASH
CHROMIC ACID
OXALIC ACID
Mutual Chemical Co. of America
270 MADISON AVENUE, NEW YORK

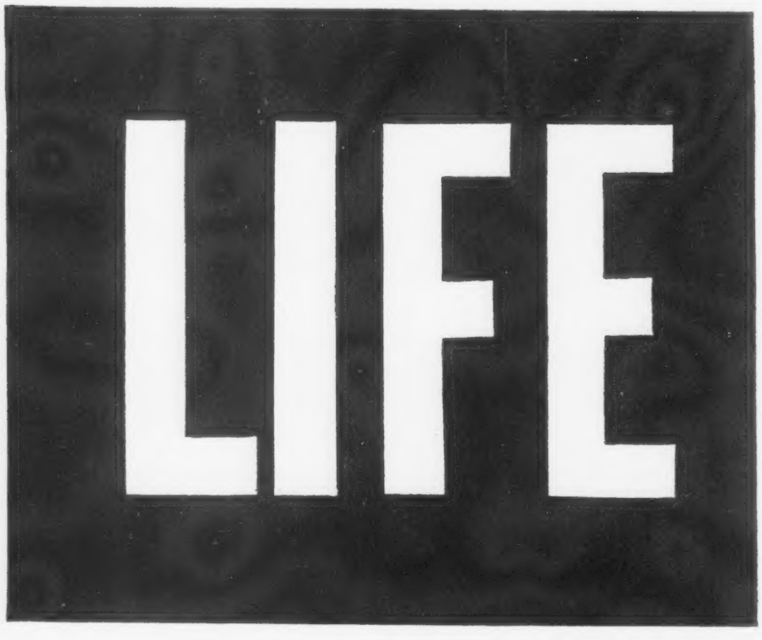








(*Above*) **THANKSGIVING DAY** will be signalized again this year by parades of giant toys floating high above city streets. Photo shows the finishing touches being applied to one of the helium-inflated rubber balloons that will take part in the parade. Cyanamid research in rubber chemicals aids the industry in the solution of difficult compounding problems.



(*Above*) **FOUR AWARDS** in the Fifth Annual Modern Plastics Competition were won by articles made from Beetle*. Score was three First Prizes, one Honorable Mention. Top to bottom, award-winners were: Plasdecor, new use of Beetle laminated plastic developed by Alice Donaldson, preserving in plastics for the first time the beauties of hand painting and of designs in textiles in their natural colors; Schick Shaver designed by Raymond Loewy; "Topper," smartly styled new Kadette Radio; and Zephyr American Corporation's three-piece desk set, consisting of Autodex telephone index, Rollodex, and Thermodex.

(*Right*) **TARNISHING AGENTS** in paper or printing inks are detected in quantities as small as one part per million by this sensitive test devised by C. H. Ohlwiler, of American Optical Company. Photo shows test being applied to paper sample. Presence of tarnishing sulphides causes darkening of cloth sensitized by slightly acid solution of lead acetate.

They Started Something!

THE COURAGE and vision of the men who conceived the idea of transcontinental railroads, and built the lines of steel stretching from coast to coast, brought about swift and striking changes in the nation's development.

The completion of the transcontinental railroads in the face of almost insurmountable obstacles welded the country's far-flung lands into a cohesive whole; opened vast areas for settlement and development; allowed the economical utilization of the nation's rich store of natural resources; brought new possibilities for pleasure and recreation within the reach of millions.

When EBG engineers first made Liquid Chlorine commercially available in America, their achievement was also destined to play an essential role in the development of many of the country's key industries, and in the health of its population. Municipal health authorities quickly realized that in EBG Liquid Chlorine they had a new and potent weapon for controlling the risk of infection by water-borne diseases. In recent years EBG Liquid Chlorine has still further extended its usefulness in safeguarding the public health through its entry into the important field of sewage disinfection. The paper and textile industries found that EBG Liquid Chlorine opened the way to more economical bleaching processes. EBG engineers, first to produce Liquid Chlorine in this country, have the advantage of extra years of experience in its manufacture and servicing. Let that experience work for you—specify EBG Liquid Chlorine.

The first cylinder of Liquid Chlorine made by EBG in 1909.

ELECTRO BLEACHING GAS COMPANY
Main Office: 60 East 42nd Street, New York, N. Y.
Plant: Niagara Falls, N. Y.

EBG Liquid Chlorine
FIRST IN THE COUNTRY

CHEMICAL INDUSTRIES
The Chemical Business Magazine
Established 1914

New Chemicals for Industry

CHEMICAL INDUSTRIES has focused nationwide attention on the practical results of the work of the chemist, quietly working in the industrial laboratories of the country, by exhibiting the "New Chemicals for Industry" at its booth at each of the last three Chemical Expositions held in New York and by publishing pertinent technical data in pre-exposition issues. Once again this highly informative display, brought up-to-date, will be seen and studied by a large cross-section of American chemists, engineers and industrialists—this time at the National Chemical Exposition, to be held at the Hotel Stevens, December 11-15, under the sponsorship of the Chicago Section of the American Chemical Society. Those who unfortunately may be unable to attend the exposition and to visit with us will find a satisfactory substitute in the pages of this issue devoted to describing nearly 500 chemicals developed in the last three years by American chemists. In a real sense it is a check-list of American chemical enterprise.

"New Chemicals for Industry"—the phrase assumes much deeper significance now that the United States is engaged in a stupendous program of national defense.

In twenty years the American chemical industry has grown from very modest proportions to the largest in the world. This unprecedented expansion has been based on sound economic principles. It has been based on true democratic principles. New products have followed one another in almost bewildering succession, but one thing they have had in common—they were products of peace. They made possible a much higher standard of living for the masses. Now many of these products must be produced in large quantities and tragically their original purposes possibly perverted. Instead of saving and aiding mankind, they may be employed to destroy. But the American chemical conscience is clear. The American chemist, the American chemical industrialist wants peace—not war.

Geared though it be to peace-time development, the chemical industry of America is ready for any emergency. No consternation grips us now as it did a quarter of a century ago. But today's confidence should not be permitted to develop into over-confidence.

Two important differences are to be noted when conditions prevailing in 1914 are compared with those existing in 1940. First, war is more highly mechanized and successful prosecution of war is now even more greatly dependent upon a highly industrialized background. This means a much heavier demand for chemicals. Second, in 1917-1919 we had no fear that the sea-lanes would not remain open and that we would be able to draw upon the natural raw materials of the world. Today we are not entirely certain. We must seek substitutes and synthetics; we must immediately adopt "ersatz" programs for certain vital materials.

While we will turn much of our peace-time industrial activity over to the defense program, we must not lose sight of the all-important fact that normal necessities must be provided for. It has been authoritatively estimated that not more than twenty per cent. of our productive capacity will be engaged in meeting the requirements of the country's preparedness efforts. But practically all industry will be affected in one way or another. Certain essential materials will be completely unavailable or their availability decreased. Others will be higher in price. Such a situation is a challenge to American industrial management.

And so "New Chemicals for Industry" takes on a much deeper significance. At our exhibit in Chicago you will see many new chemicals essential to defense; new chemicals that will effectively replace foreign natural raw materials that we have long depended upon; new chemicals that will reduce the cost of production and revolutionize many existing manufacturing methods; new chemicals that will, despite the present world crisis, ultimately raise still further the standard of living in America.

We cordially invite you to inspect at our exhibit the fruits of American technical ingenuity.

Walter J. Murphy

Editor, "Chemical Industries."

Editorial

Challenge To Research: Much of our private industrial research is conducted somewhat along the following lines. A company finds that it can make this or that new chemical employing as raw materials the products that it is already manufacturing in commercial quantities, or, perhaps, it finds that certain byproducts can be further processed or purified. It then seeks to find uses for the new chemical. As every research sale development department head knows this is no easy task in practically every instance. Even the best informed cannot be expected to know all of the yet unsolved problems of industry. Bert H. White, well-known author on business subjects and vice-president of the Liberty National Bank, Buffalo, New York, has been instrumental in organizing The Research Advisory Service, maintained by a group of American banks.

Mr. White and his associates appreciate that there is a second method of approach to research. And so they asked thousands of American manufacturers this question.

"What new product, process or material might industrial research develop that would be valuable to your industry?"

Most enlightening were the thousand-odd replies received. These answers have been classified and are presented in a limited edition available to business men under thirty-four classifications ranging from adhesives to wood.

For the first time large and small research organizations alike have an opportunity of definitely knowing what business wants in the way of new or improved products. Mr. White's idea is so relatively simple and so sound that the wonder of it all is that it was not undertaken years ago. There is a bright future ahead for this "clearing house" for research problems if all industry unselfishly cooperates.

Plant Sites: The present defense program calls for an expenditure of well over a billion dollars in new plants. In the chemical field alone the government is expected to spend some four hundred million dollars. At the present time, unfortunately, unmistakable signs are all too much in evidence in Washington pointing to a tremendous pressure being exerted to select sites for political purposes. Tragic results will inevitably occur unless such pressure is halted immediately. First, our immediate defense program will be seriously delayed; secondly, our post-preparedness period will be cursed with efforts of politicians and local groups attempting to convert "stand-by" and possibly then technically obsolete plants into peace-time industrial operation.

The chemical industry has located in certain areas primarily for the following reasons: one, close proximity to raw materials, such as hardwood, coal, iron, salt, lime, petroleum, etc. Two, a large consumer market. Three, abundance of competent labor. Four, large quantities of cheap power.

Let us trace what will happen inevitably if political pressure forces the location of a chemical plant in a state not abundantly endowed with the four essential requirements enumerated above. A small town is selected. Immediately hundreds of workmen and merchants must be brought there. This seriously cripples production in the existing large manufacturing areas. Housing must be provided with its attendant delays and confusion. When the present emergency is over, as it eventually must, will the politicians and the citizens of that town and the surrounding area consent to shutting down such a plant? Certainly not. Either it will be sold to some private group at a "fire-sale" price, or failing in this, the Federal Government will be asked to operate it in competition with private industry. In either case private industry stands to be seriously penalized.

The technicians of the Army, Navy and the Defense Commission are thoroughly capable of selecting the most suitable plant sites available if freed from outside political pressure. The best possible means of making certain that such pressure is not exerted is the immediate creation of a War Defense Commission with all of the power and authority which the War Industries Board possessed in the World War.

The selection of a site in T. V. A. area for an ammonium nitrate plant is concrete evidence of what is going on in Washington and is indicative of the trend toward "state socialism". The finished product will have to be transported on an average of 500 miles to the shell-loading plants. This is but one objection—there are many others.

Outlook for Synthetic Rubber: John L. Collyer, president of Goodrich, has performed a signal service by pointing out at this time the following points bearing on the synthetic rubber situation.

1. A 35,000-ton-a-year plant, the most efficient size unit, would produce synthetic rubber at approximately twenty-five cents per pound.
2. With priorities of necessary materials and machinery, it would take at least three years to provide sufficient plant capacity to produce the synthetic rubber needed to replace natural rubber in all tires manufactured in this country.
3. With annual world productive capacity of natural rubber estimated at 1,600,000 tons—and annual world consumption averaging 1,000,000 tons—the current price of natural rubber, at approximately twenty cents, is an artificial price maintained by an international control agreement.

Under such conditions only "stand-by" plants can be justified from an economic standpoint. True, we may well find after two or three years of actual experience in the manufacture of synthetic rubber that we can produce a product at a price that can compete with the then existing price of natural rubber, or we may find that synthetic rubber has such superior qualities over the natural product that consumers will gladly pay a premium. But all this remains to be proven. And, until it is, we will have to consider a synthetic rubber plant in the same category as a battleship or a bomber—purely a defense necessity.

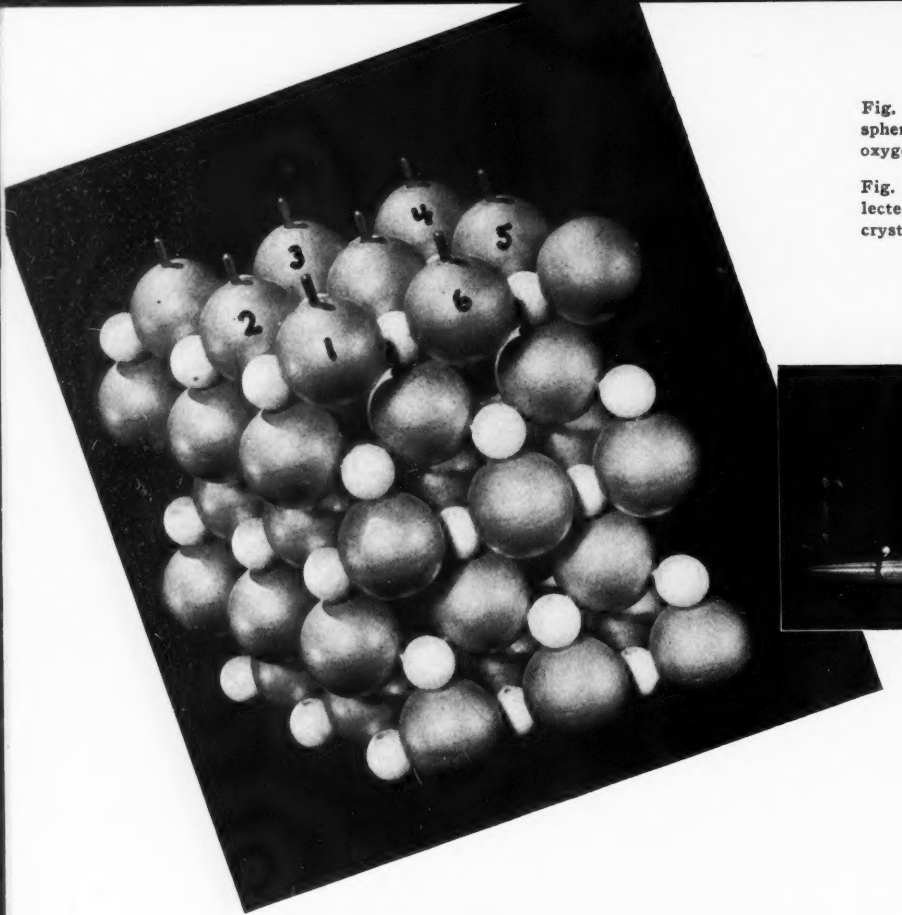


Fig. 1. (left) Model of a zinc oxide crystal. Large spheres represent zinc atoms. Small spheres represent oxygen atoms.

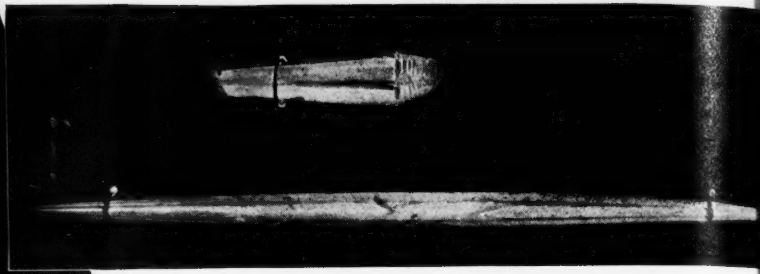


Fig. 2. (below) Zinc oxide crystals (rock oxide) collected from furnace residue, showing characteristic crystal. (One third enlargement.)

ZINC OXIDE

And Its Paint Making Properties

By Harley A. Nelson, *New Jersey Zinc Company*

Special Optical, Physical and Chemical Properties Give Zinc Oxide a Wide Versatility As a Paint-Making Raw Material. Many Examples Are Described in This Installment of a Two-Part Article on the Subject.

ZINC oxide leads all other paint pigments in the variety of uses for which it is employed. Plainly, this is the result of thinking of zinc oxide as a paint-making raw material with special optical, physical and chemical properties of such practical value that its purely pigment characteristics may be considered of secondary importance. For this reason, the paint formulator of today many times finds himself using zinc oxide without having given any consideration to the fact that it rates well up in the scale as a white hiding pigment, and that it is among the best from the standpoint of color.

Leading up to these uses, is a story of organized research—much of it a deep probing into fundamental chemistry. The fruits of that research can now be counted. Not only has it resulted in a fuller knowledge as to how and why desirable results are obtained with zinc oxide in paint, but it has proved that zinc oxide is amenable to many previously unsuspected adjustments of its characteristics, and this versatility is constantly adding to its value for the paint formulator. In what follows will be given a summary of some of the more important research findings as they relate to practical paint formulation.

The fundamental chemistry of all zinc oxides starts from the fact that, according to x-ray evidence, they are crystalline materials built up in the form of what is known as a hexagonal close-packed lattice. This structure can be readily visualized by the model in Figure 1, which shows how the zinc and oxygen atoms dispose themselves in alternate layers. This characteristic crystal growth is also graphically illustrated by the crystals shown in Figure 2, formed under ideal crystallizing conditions by very slow and undisturbed oxidation of zinc metal fume within a pile of zinc oxide furnace residue.

Zinc oxide crystals have a relatively high and uniform degree of transparency to light throughout the visible spectrum, which is necessary for producing a white pigment of good brightness and color. Zinc oxides can be made in a wide range of brightnesses and color tones, depending on the requirements for the particular use, but the brightness-color curves in Figure 3 are typical of the most used grades.

On the other hand, the transmission qualities of zinc oxide in the ultra-violet region of the spectrum are unique because of the sharpness with which the radiations are cut off at about 3600 A° U°, therefore preventing the transmission of ultra-violet (actinic) light that has the most destructive effect on organic binders. Ultra-violet transmission curves for typical pigments are shown in Figure 4. Figure 5 also demonstrates this difference between pigments as it is revealed when ultra-violet light is used for illumination in making photomicrographs.

The significance of this property became apparent in the early studies of the effects of ultra-violet light on paint films. A very rapid disintegration of unpigmented oil films was shown, as compared with the partial protection offered to the binder by the semi-transparent pigments, and the effective protection obtained with zinc oxides. This knowledge has helped to explain many of the desirable effects obtained with zinc oxide in exterior paints.

Proper particle size and particle size distribution for the job at hand are other requirements common to all pigments, and zinc oxide has proved amenable to adjustment over a wide range of average particle sizes, from practically colloidal pigment approximating 0.12 micron to relatively coarse pigment approximating 5 microns in diameter. Figure 6 shows typical particle size distribution curves for some zinc oxides within the particle size range that is of most common interest. The versatility of zinc oxide from this standpoint is a great advantage because particle size modification can be employed for so many practical purposes,

such as adjustments in amount of reaction between the pigment and the vehicle, consistency, gloss, hardness of the film, and weathering characteristics. A discussion of such adjustments is given later in this article.

The particle shape of zinc oxide is also relatively amenable to control. Classification of the forms that appear under the microscope can be made in only a general way. The most common form is nodular—usually more or less irregular—which is obtainable in a wide range of particle sizes. The "Seal" oxides, or French process types, generally come under this classification, but with relatively uniform particle size distributions. The American process type zinc oxides, on the other hand, usually are less uniform both as to particle size and shape and are particularly likely to contain, in addition, different modifications of the natural crystalline form (hexagonal prismatic), commonly known as acicular or spicular particles. These sometimes join at a common base to form what are popularly called "twins" and "threelings." The percentage of acicular crystals may also be increased until they predominate to any desired degree, but the usual commercial zinc oxides of this type consist of mixtures of acicular particles with other shapes. Figure 7 shows photomicrographs of some typical zinc oxides.

There has been considerable discussion of the part which particle shape plays in the durability of zinc oxide. Both nodular and acicular oxides have been observed, and there is no indication that durability depends entirely on particle shape. Neither type can be considered a cure-all because zinc oxides will behave somewhat differently in different formulas, and because of the variable nature of service requirements. Also, the extremes of either type will usually show some markedly individual characteristics that may be considered either advantageous or disadvantageous, depending on circumstances. For example, while a highly acicular zinc oxide will delay surface checking where the formula has that tendency, acicular particles often promote a longitudinal slitting type of ultimate failure. On the other hand, a strictly nodular zinc oxide may show earlier surface checking, but the pattern is more likely to be uniformly distributed and is less likely to develop into ultimate failure of a localized slitting type.

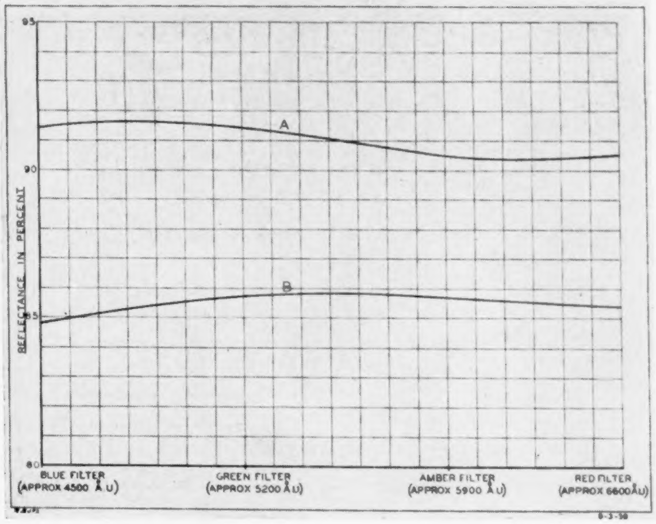


Fig. 3. Typical reflectance (brightness) values for zinc oxides determined in pastes with pale oil. Reflectance values are in reference to magnesium oxide as a standard taken as having 100% reflectance. Type "A" is for use in enamels, "B" for use in exterior paints, etc.

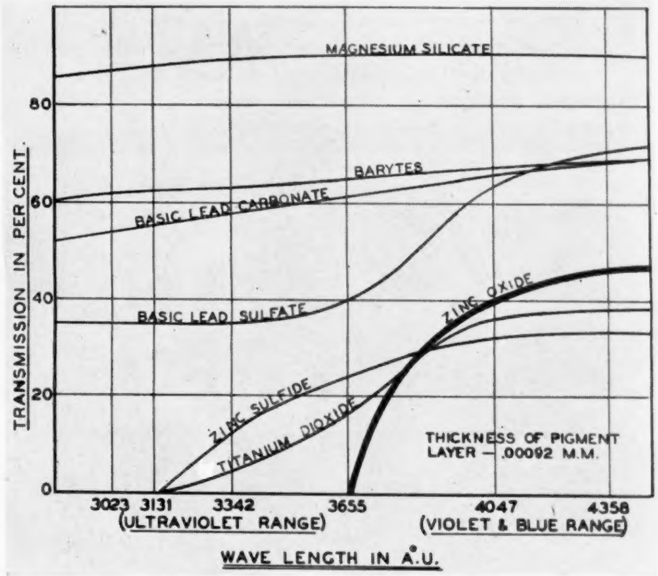


Fig. 4. Transparency of white pigments to ultra-violet light radiation. Zinc oxide is opaque to the destructive ultra-violet (actinic) rays.

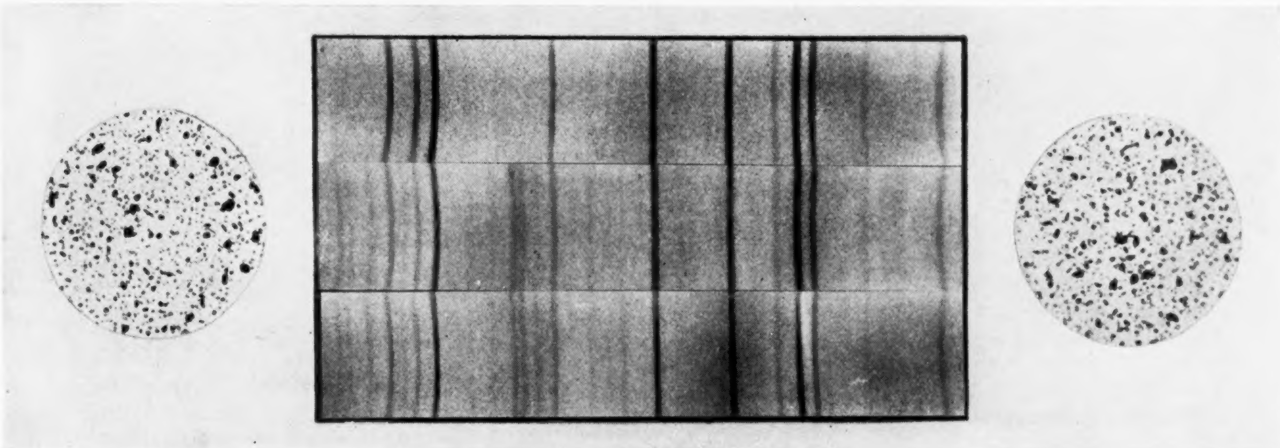
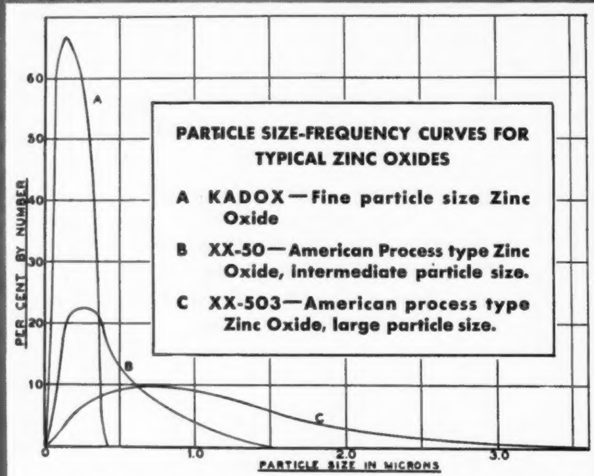


Fig. 5. X-ray diffraction patterns showing that leaded zinc oxides produced by mixing zinc oxide and lead sulfates are no different in composition from those obtained by producing the fumes in the same furnace (co-fuming). Top panel shows lead free zinc oxide, center panel, co-fumed 35% leaded zinc oxide, bottom, blended 35% leaded zinc oxide. Right is photomicrograph of co-fumed 35% leaded zinc oxide, left, blended 35% leaded zinc oxide. In the photomicrograph (taken by ultra-violet light of 2750 A° U°), the dark particles are opaque zinc oxide crystals, clear particles are lead sulfates.



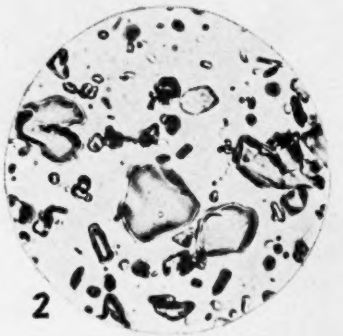
It is the chemical nature of zinc oxide that accounts for many of its unique qualities in paint. Ordinarily, the degree to which reactivity functions depends largely on particle size, or more accurately on surface area, which can range from 6.0 square meters per gram of pigment in a colloidal type zinc oxide down to 0.6 square meters per gram for the larger particle sizes.

Fig. 6.

In view of this situation, and because factors other than particle shape also enter into the results, the logical trend is in the direction of compromises between the two extremes. However, in considering shape differences as a factor in durability, the information obtained by merely looking at photomicrographs is not final or very reliable. Most important is careful control of manufacture, and since zinc oxides specially designed and tested for exterior service are now generally available, only these should be used in formulating the standard types of exterior paints.

If, for a specific reason, a large particle size zinc oxide is to be used, the lower surface area of the pigment per unit volume should be taken into account by increasing the pigment-fixed vehicle ratio (P. F. V.) in the paint. The true relationship of pigment to fixed vehicle should be based on the surface area of the pigment, and not alone on the pounds of pigment or on the pigment volume calculated from an arbitrary specific gravity figure. This is evident when we consider that the surface areas of zinc oxides that are largely used in exterior house paints range from approximately 2.5 square meters per gram (approximately 12,000 square feet per pound) for the smaller particle sizes to 0.6 square meter per gram (approximately 3,000 square feet per pound) for the larger sizes. Fortunately, for practical purposes in house paint formulation, the proper correction to compensate for any such reduction of pigment surface in the usual linseed vehicles is generally indicated by the increased pigmentation required to obtain equal painting consistency if no changes are made in the vehicle.

1



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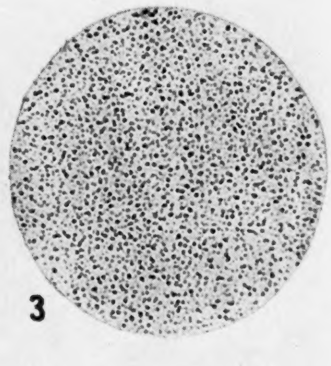

3

Fig. 7. (Magnification 1285 X)

1. Acicular type zinc oxide, relatively non-uniform in size distribution. Because of high proportion of acicular particles, it is impractical to estimate the average particle size.

2. Nodular type zinc oxide of large size and relatively uniform size distribution (No colloidal fines). Average particle size about 5 microns.

3. Nodular type zinc oxide of uniform and fine (practically colloidal) size. Average particle size approximately 0.12 micron.

Leaded zinc oxides, usually containing either 35% or 50% basic lead sulfate (actually mixtures of normal and basic lead sulfates) have become popular because they provide a combination of zinc oxide and lead in convenient form. Two types of leaded zinc oxides, co-fumed and blended, are in use. Both are generally satisfactory and the processes by which they are obtained may properly be disregarded. The co-fumed product, which is the older type, is a satisfactory product for durability, although limited in some of its other properties. However, the present knowledge about zinc oxide makes it practical to mix zinc oxides specially designed for use in exterior paints with basic lead sulfate and obtain leaded zinc oxides of the blended type equal to, or better than, the co-fumed products in durability, but without their limitations in other properties.

The belief has been rather general that some combination product of zinc oxide and lead sulfate is formed when a leaded zinc oxide is co-fumed. According to X-ray evidence, there is no indication of compounds of lead or zinc being formed that are not obtained when zinc oxide and basic lead sulfate are produced separately. The evidence of this similarity of the mixtures is shown by the X-ray diffraction patterns in Figure 5, and is further substantiated by the similarity of the ultra-violet photomicrographs of two such leaded zinc oxides, as also shown in Figure 5.

One generalization that can be made

about the amount of zinc oxide* to use in an exterior oleoresinous type of paint is that the percentage should increase with the chalking type, high hiding pigment and silicious inert content of the pigment and the bodied oil content of the vehicle. While these have advantages, they also have weaknesses that can be overcome only by using zinc oxide. In most cases, 25% zinc oxide is the minimum that can be expected to have any appreciable effect on tint retention, controlled chalking, and growth of mildew, and promote proper self-cleansing of the film (See Figures 8, 9, 10 and 11, inclusive). Thirty per cent. is very popular in house paints now on the market but, the trend being toward the use of greater percentages of high hiding pigments and other ingredients that in themselves tend to form still softer films, the use of higher percentages of zinc oxide promises to become even more general.

Zinc oxide protects the underlying layers of the binder from the action of ultra-violet light and thus retards chalking and erosion, as illustrated by Figure 10, but this does not necessarily explain why the surface skin of the binder resists exposure so much longer when zinc oxide is present. Increased resistance to moisture through polymerization of the vehicle brought about by the presence of zinc oxide would be expected to produce this result, as pointed out under the discussion of gloss retention, and this possibility is important in view of the fact that absorption of moisture by the film is an important factor in promoting photochemical reactions.

Pigments that have a tendency to chalk freely generally form a "sticky" adherent chalk that promotes dirt retention and masks the surface to produce a faded appearance of tinted paints. The addition of zinc oxide changes the nature of this chalk to a "non-sticky" type. Consequently, dirt shedding (self-cleansing) is actually promoted if the proper balance of zinc oxide is maintained, as shown by Figures 8 and 9. This might to some extent be due to the effect of zinc soaps on the nature of the chalk, but it has been observed that the less reactive zinc oxides can be just as effective.

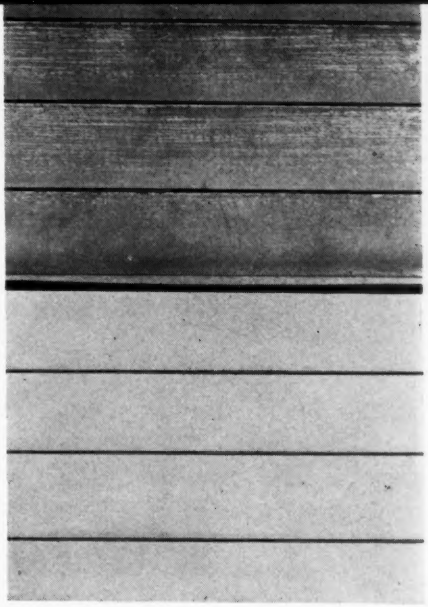

Fig. 8.

Top four panels represent combination of 45% titanium-barium, 35% basic carbonate white lead, and 20% silicious mixture. (Chalk is sticky and adheres and therefore holds dirt.) Four bottom panels show a combination of 45% titanium barium, 35% zinc oxide, and 20% silicious mixture. Both paints have linseed oil vehicles and were exposed 4 years vertically.

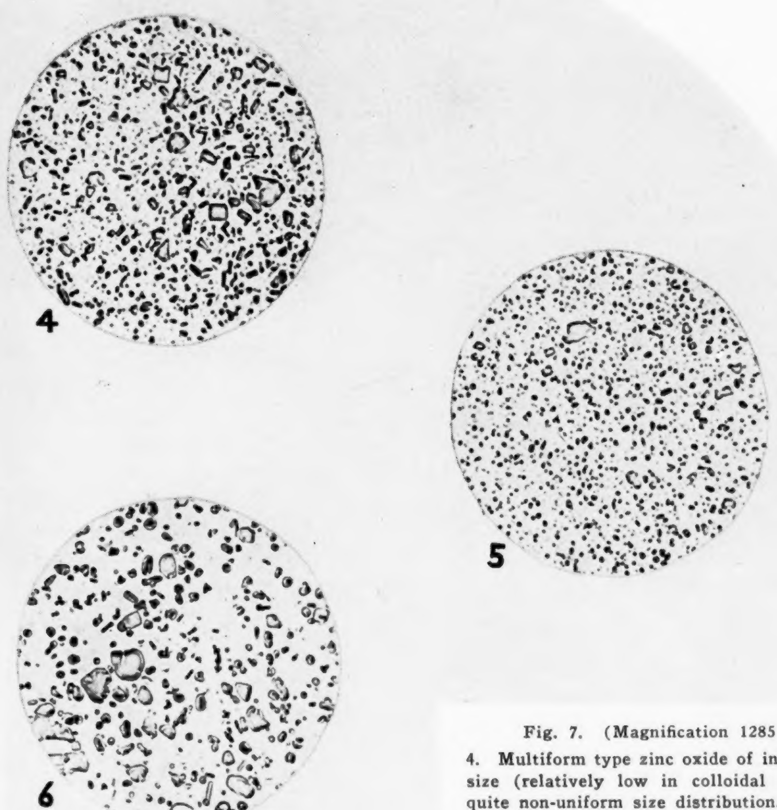

Fig. 7. (Magnification 1285 X)

4. Multiform type zinc oxide of intermediate size (relatively low in colloidal fines) and quite non-uniform size distribution. Average particle size approximately 0.4 micron.

5. Nodular type zinc oxide of intermediate size (considerable colloidal fines) and less uniform size distribution. Average particle size approximately 0.3 micron.

6. Nodular type zinc oxide or larger size and relatively uniform size distribution. (Relatively free of colloidal fines). Average particle size approximately 1.3 microns.

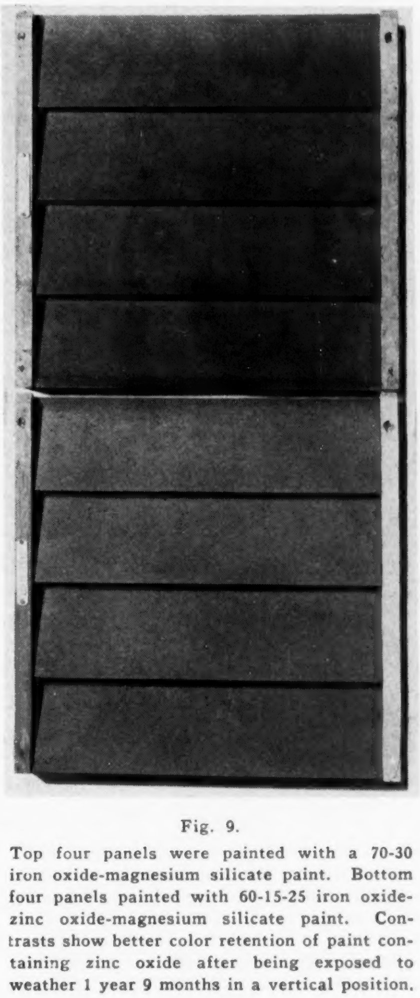

Fig. 9.

Top four panels were painted with a 70-30 iron oxide-magnesium silicate paint. Bottom four panels painted with 60-15-25 iron oxide-zinc oxide-magnesium silicate paint. Contrasts show better color retention of paint containing zinc oxide after being exposed to weather 1 year 9 months in a vertical position.

The percentages of zinc oxide that were mentioned above refer to white paints. For tints and many dark colors, the use of from 35% to 50% zinc oxide has long been common practice to aid color retention. The value of higher percentages of zinc oxide for this purpose is generally ascribed to reduced chalking tendencies

* In all cases, the percentages refer to the actual amount of zinc oxide in the pigment formula and do not take into account incidental ingredients, such as the basic lead sulfate in leaded zinc oxides.

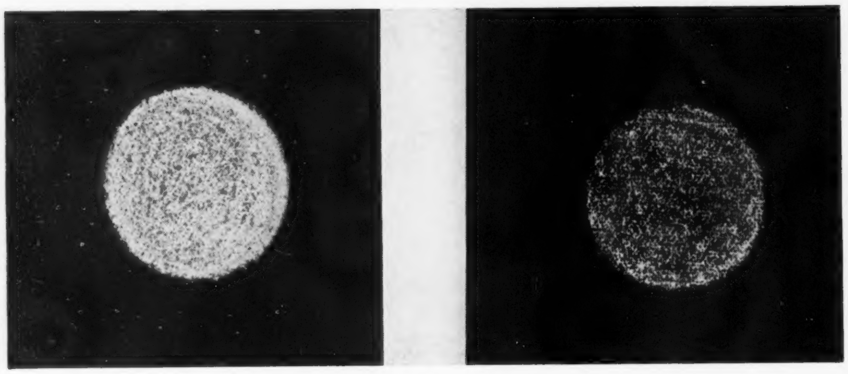

Fig. 10. Zinc oxide reduces the amount and changes the nature of the chalk on exterior house paints. Microphotograph on left shows chalking of a paint containing no zinc oxide. On right is paint with zinc oxide as used on a Hercules chalk test.

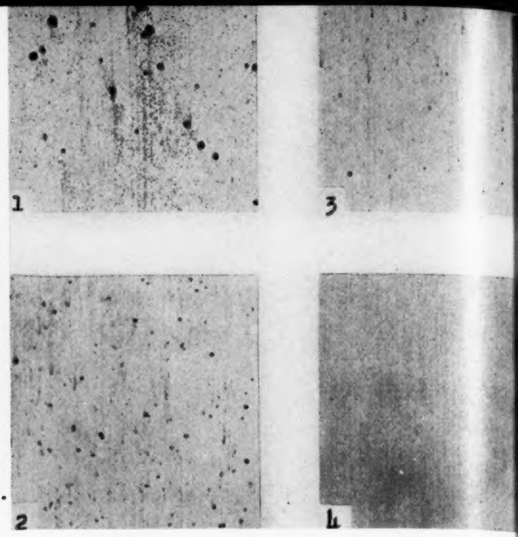

Fig. 11. Effect of increasing zinc oxide content for improving mildew control on house paints. 1. No zinc oxide. 2. 6.5% zinc oxide. 3. 13.0% zinc oxide. 4. 19.5% zinc oxide. Panels exposed 1½ years at Palmerton, Pa. Larger amounts of zinc oxide to control mildew in more humid locations.

(see Figure 8), although there are a large number of cases where color changes not involving chalking are reduced or prevented with zinc oxide. Improved results in cases of the latter type might be due to neutralization by zinc oxide of decomposition products formed in the binder, these decomposition products otherwise having detrimental action on the color. In either case, opacity of zinc oxide to ultra-violet light and increased moisture resistance of the binder, when zinc oxide is used, are important factors.

Because of the variability of wood surfaces, some have considered it necessary to use special primers under a finish coat (or coats) rather than old established, self-primed painting systems for house paints. These special primers are conceived as more plastic intermediaries that will follow the physical changes of the wood surface and thus serve as bonding agents, and on the basis of this reasoning zinc oxide is sometimes omitted. However, this may often be a serious mistake because the primer remains too plastic for the finish coat, which must be formulated to withstand weathering. A safer course is to include 10% to 15% zinc oxide in the primer formula to insure compatibility of the freshly applied paint films with one another and avoid failures of the finish coat, which are likely to show up in the form of alligatoring, course checking or actual film separation (see Figure 12). Neither added zinc soaps nor driers nor other hardening agents appear to be as effective as zinc oxide for restoring this balance. This generalization is one that applies with the moderately reactive zinc oxides, as well as the more reactive products.

One of the special advantages that can be traced to the zinc oxide in house paints is the better uniformity of film structure that is promoted by zinc oxide, which is an advantage in undercoaters and special primers as well. It is due to the fact that zinc oxide is more completely wetted by the vehicle than the less reactive pigments and, consequently, tends to prevent the binder from soaking into the localized areas that happen to be more porous. This advantage shows up particularly where single-coat repaint jobs are done. In such cases the repaint coat containing zinc oxide will not only appear more uniform at the outset, but will also weather more uniformly without showing "flat" spots over the more porous areas.

The best practice in pigment formulation for normal cement-containing or masonry-type surfaces, in general falls in line with the best practice for exterior paints for wood. Chalking, erosion, and mildew are likely to be accentuated on such surfaces, so it is desirable to keep the zinc oxide content on the high side. This means that from 30% to 50% is desirable, depending on the color of the paint.

Although various schemes have been proposed for inserting permanent traffic direction markers in streets and highways, the ease with which changes and rearrangements can be made maintains the popularity of traffic paint. The important demands on such paints are abrasion and weather resistance, balanced with good average adhesion to different types of road surfaces. Zinc oxide is depended on to add abrasion-, moisture- and weather-resistance. From 20% to 40% is used, and the types designed for general exterior exposure (house paints, etc.) are preferred.

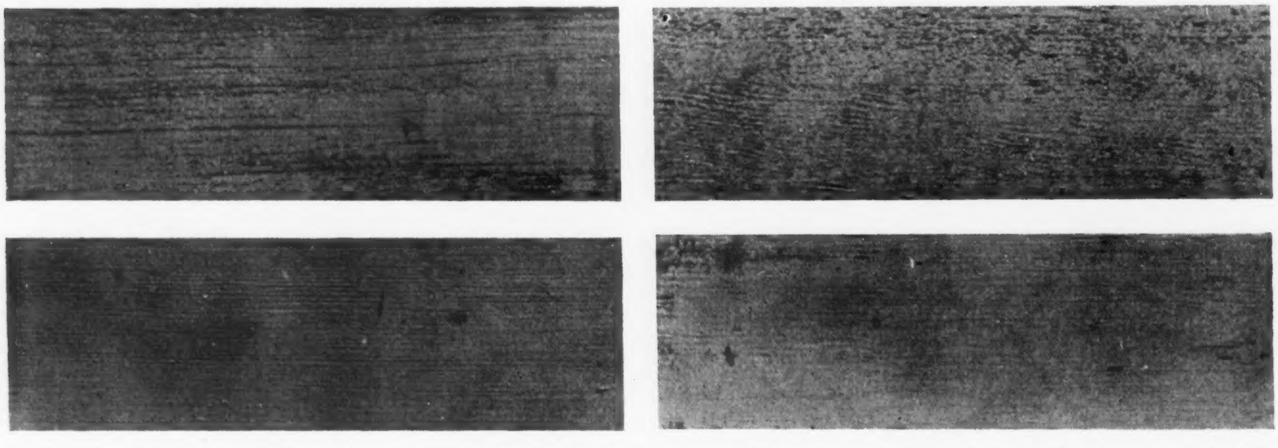

Fig. 12. Top left, zinc oxide free primer . . . Titanium-barium-lead-zinc type finish coat. Bottom left, zinc oxide in primer . . . Titanium-barium-lead-zinc type finish coat. Top right, zinc oxide-free primer . . . lead-zinc type finish coat. Bottom right, zinc oxide in primer . . . lead-zinc type finish. (Exposed three years vertical.)

AGRICULTURAL WASTES

Leo M. Christensen*
The Author

Not In Limiting Production, But In the Growing Movement of Farm Chemurgy, Does the Real Future of the American Farmer Lie.

SO much has been said and written about the farm problem, especially during the past ten years, that the basic features of the situation have become somewhat obscured. Fundamentally the problem is the same that has been faced by many industries, by some of them more than once. It has simply become impossible to sell the output of the American agricultural plant in existing markets at prices that pay the cost of production and a reasonable profit. Chemical industry long ago learned the answers —find new markets or the means of expanding present ones and take advantage of every research accomplishment in the direction of lower production costs.

To a large degree the reduction in processing costs in chemical industry have come through finding profitable use for byproducts previously thrown away. So great have been the accomplishments in this direction that the chemist has adopted as a basic part of his philosophy the conviction that where there is byproduct there is hope. Small wonder then that the chemist has become enthusiastic about the future for agriculture, where there are so many unused byproducts, when others have been able to see nothing but a continued decline in prosperity and a further reduction in the importance of agriculture in the national economy.

The chemists who have seen the possibilities for a new level of prosperity for American agriculture have been able to convince some others, and notably some of the leaders in American chemical business, of the bright future for this basic industry. Out of this has grown the movement known as Farm Chemurgy. It cannot yet be said that there is a detailed and definite program, but the name does describe a basic philosophy and serves as the nucleus around which definite ideas are crystallizing. Neither will the present discussion develop a detailed program, but perhaps it will point out some of the fundamental problems and principles involved.

That there are wastes in the form of unused byproducts in agriculture, no one questions. But the character of these wastes, their location and their relation to agriculture's main products and processes are not always well understood. Agriculture is fundamentally a chemical industry so far as processes are concerned, but it differs from others in the type of physical plant used and business management employed. Thus when the chemist deals with an unused byproduct in a chemical factory, he has the material already in the plant where it will be used. A pipe line or belt conveyor serves to take it to the point where it will be processed. But agriculture is spread all over the country and the unused byproducts are produced on each of the six million farms in operation. Most of the processes the chemist has developed and discussed for putting these materials to use are not adaptable to operation on single farms and thus the problem of concentration becomes a matter of great concern. And the fact that

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Above—The practice of burning the stubble left from combining small grains is rapidly declining as farmers learn the importance of adding organic matter to the soil.

there are potentially six million raw material producers makes the business relationship somewhat unwieldy.

This is particularly the case with such bulky materials as the cereal straws, corn stalks, corn cobs and the like. There have been many uses described for these agricultural byproducts. Cereal straws have long been used for the manufacture of kraft paper and straw board. At least two attempts have been made to use corn stalks for the manufacture of insulating board, and at least one to use them for the manufacture of paper. Corn cobs have had attention as a raw material for the production of crude xylose to be used in the fermentation industries, the residue being of interest in a fermentation process for the production of acetic acid. Technically the processes have been quite sound, but collection of the raw materials has constituted a serious unsolved problem.

At what price might these materials be had? The first factor is the value of the materials on the farm. Cereal straws and corn stalks have value when returned to the soil, and the importance of the organic matter content of cultivated soils is rapidly becoming generally appreciated. Probably the minimum value for this use is in the order of magnitude of $2.00 per ton, with application on the land where the materials were produced. Collection and baling cost something like $2.00 to $3.00 per ton. Collection of the baled stalks or straw and transportation of the baled material to a factory or a loading point costs $1.50 to $2.00 per ton. Add to this the cost of piling the baled material at the plant and other miscellaneous items and the total cost of the material ready for processing is $7.00 to $8.00 per ton. On the basis of information from past experiences, this will also be the cost of corn cobs, which are not so much of value as a source of organic matter in the soil but which are largely used on the farm as fuel.

The extent to which corn stalks and corn cobs are utilized on the farm can be appreciated only when an effort is made to obtain the volume of supplies needed for an industrial chemical operation. It is probable that the annual domestic production of corn stalks is between 100 and 150 million tons and that between 15 and 20 million tons of corn cobs are produced each year. But even in areas of the heaviest corn production, procurement of adequate supplies for commercial scale plant operation is far from simple.

Left—Castor beans and other vegetable oil crops are likely to become an important feature of American agriculture. They produce a much higher quality cellulose than do the cereal crops.

The cellulose of crops producing seed in which the reserve food is in the form of starch is not generally of good quality, from the standpoint of chemical utilization. But the cellulose of crops bearing seed in which the reserve food is in the form of fats or oils is a great deal better. Thus $7.00 to $8.00 per ton is undoubtedly greater than the value of such things as corn stalks and cereal straws for most of the processes that have had consideration, but the same conclusion may not hold for the cellulosic byproducts from such crops as castor beans, safflower, flax and cotton. There are possibilities for success in the utilization of these materials in the chemical industry that do not apply in the case of the lower quality wastes. Castor beans and safflower are not now grown on large acreage in the United States, but the new interest in these crops as domestic sources of desirable oils probably will lead to a much more extensive planting, since both are readily adaptable to cultivation in selected areas of the country. Flax has not been a particularly popular crop in most sections of the country and there seems to be some question whether it ever will be, because it does not yield enough seed per acre and suffers from some cultural defects. The position of cotton is full of uncertainty and it is difficult to estimate where it will stand at the end of the transition period through which it is now passing. Of the known feasible oil crops, and on the basis of present knowledge, the castor bean presents by far the best situation as regards its use as a source of supply of high quality annually grown cellulose for chemical utilization.

Cereal Straws Decreasing

Another factor has recently assumed great importance in this connection. With the increasing use of the combine and header, the amount of cereal straws available for sale from the farm is decreasing. One of the features now so noticeable in wheat areas is the absence of straw stacks, so long identified with the production of this grain. In many sections of the country a straw stack is quite a curiosity. In a few cases the stubble left in the field in this new technique is burned, the reason being that the farmer wants to be rid of it so that he can plant a fall sown crop, usually more wheat. The farmer who follows such practices soon observes that the soil does not till satisfactorily and that crop yields decline, all of which soils research workers have long warned him would happen. There can be no doubt that wasteful destruction of this kind will decrease.

Of course there are some outstanding cases of cellulosic byproducts available on a much more economical basis. Sugar cane bagasse in Louisiana and Florida, oat hulls in Iowa, peanut hulls in the Southeast, walnut shells in California and cotton seed hull bran in the South are examples of cellulosic byproducts of agricultural origin concentrated in the form of trade wastes. The fuel value, which is something like $2.00 per ton, has in the past established the minimum price for such byproducts. The ready availability and the lower cost have been factors leading to the utilization of these byproducts instead of those that have to be collected from the farm. Wall board and furfural are the best known products made from these wastes. Large amounts are still available for chemical utilization, at present being used as fuel.

Cellulose By-Products

There have been several suggestions for the use on the farm of the various cellulosic byproducts. Buswell and his associates in Illinois developed a process for the production of combustible gas from cereal straw and the like by an easily handled fermentation in which the lignin, minerals and protein of the raw material remain in a form suitable for return to the soil. Such gas may be used for household cooking, as a fuel for stationary engines and for other farm operations. The development of satisfactory equipment which the farmer might buy, and an educational campaign to show him its advantages might easily result in wide spread application of the process. The development of Prestologs, a briquetted fuel made from sawdust without added binder, and the demonstration that straws and the like can be similarly compressed into a form convenient for use in stoves and furnaces, has led to the belief that the development of a lighter weight press might make it possible to prepare such fuels on the farm, using a portable unit, thus eliminating the need for transportation of the bulky raw material. It seems probable that the cost of briquetting straw and the like should not greatly exceed that of baling.

Perhaps the farmer takes a somewhat larger view of the problem of unused byproducts than is generally held. To him the surplus of crops like corn, wheat, potatoes and cotton, and especially the lower grades of grains and cull potatoes and fruits, are as much byproducts as are those cellulosic materials commonly regarded as farm wastes. It is not an easy matter to define surplus farm products, but from the farmer's standpoint the surplus is the amount over and above that which present markets will absorb at a price level yielding a reasonable profit to the grower. All industries have to give thought to the danger of overproduction, and two general methods of handling the problem are commonly used. The producer may carefully adjust production to meet demand, or he may find other markets into which the overproduction may be sold even though at a lower price than is provided by the principal market.

In recent years there has been an effort to adjust agricultural production to match market demand, but it is perfectly obvious that there are difficulties in this connection not encountered in the case of manufacturing operations. In a factory it is possible to control production by the simple expedient of adjusting the hours of operation, but agricultural production is determined by factors not yet under man's control. Thus the acreage planted to corn is relatively constant at 100 million acres and rarely varies more than about 10 per cent. from the average, but the production has varied in a single decade from about 1.4 billion bushels to 3.2 billion bushels. Thus the farmer cannot control production from year to year, but can only adjust average production over a much longer period.

McNary-Haugen Plan

It would seem, therefore, that the farmer should use the second method entirely or as a supplement to acreage control. That is, he may have to look toward markets for the surpluses even though such markets will not pay as much as the principal market normally does. This is the basis for the discussions of two-price plans. It is interesting to note that such a plan was the basic principle in the first national farm legislation to receive serious attention, the McNary-Haugen bill.

Corn, wheat and most other cereals sell into more than one market. At the top of the list, as regards price paid and quality demanded, is the market for cereals used as food for man. Below this is the market for cereals used as feed for dairy and meat animals. Next comes the market for the grains used in the fermentation industries. At a still lower level is the export market. Below these there is now only one market and it is rarely used. Corn has been so low in price that it has been used as a household heating fuel in competition with coal and wood. At the present time the lowest price market into which grains sell largely establishes the price for all the grain marketed. Farmers are now thinking and talking about a marketing plan to improve this situation, and this naturally entails the creation of a multiple price structure. Under this arrangement the better grades of grain would sell into the higher price markets at their competitive value, while the lower grades would be removed from possible participation in these markets to sell at a lower price also dictated by competitive conditions but in another field.

If there were not more than a dozen farmers, such a plan would undoubtedly be in effect now, but with six million farmers the degree of cooperation required becomes difficult to arrange. It is probable that only through national legisla-

tion and with some degree of supervision by a federal agency will such a plan find application. Naturally the complete plan would also include inducements for sound land use and adequate storage against crop failure. As in the McNary-Haugen bill, the dumping ground for the surplus could be the world markets or some type of industrial use which would guarantee effective removal of the surplus from channels where they could compete with the better quality goods selling at the higher price level. Since dependability is a factor of some importance, it would seem that domestic industrial use would be preferable to sale in the world markets and in addition would not be so likely to bring retaliatory dumping by competitors.

It is obvious that such a plan would make available for chemical industrial use a vast amount of farm products not now looked upon as waste or byproduct in nature. Various cereals, cotton, and similar high quality farm products would be included in this supply and the variety of chemical processes that might be applied is widened considerably while at the same time the cost of collection and concentration becomes of relatively smaller importance as compared with the situation in the case of the cellulosic farm byproducts.

Such farm products already have found utilization in chemical industry but in every case the variability of price and the uncertainty of supply have always constituted a serious problem. The situation may well be appreciated when it is pointed out that the price of corn, for example, has varied from about 12 cents per bushel to $1.20 per bushel within a single decade. Naturally such vagaries cannot be tolerated in chemical industry where profit margins are simply not adequate to absorb changes in raw material cost of this magnitude. Consider, for example, the effect of such a fluctuation upon the cost of ethyl alcohol made from corn. Assuming a yield of 2.5 gallons per bushel of corn, the cost of raw material at the low level of 12 cents per bushel for corn is 4.8 cents per gallon, but it is 48 cents at the high level, a difference of 43.2 cents per gallon.

Many Possibilities

With the availability of such high quality farm products as the various grains, tubers and cotton at stable price and in dependable amount, the chemist immediately sees a vast array of things he can produce from them. From the fermentation industries ethyl alcohol, butyl alcohol, acetone, lactic acid, acetic acid, glycerol and glycols, and many other products with their accompanying byproducts immediately suggest themselves. And since these are only the intermediates from which a far larger variety of things can be made, the diversity of the market thus provided becomes apparent. Immediately flexibility is introduced into the market for these farm products, as contrasted to the inflexibility now characteristic of the markets for the things the farmer produces.

And of course the fermentation industries would not hold a monopoly on these surplus farm products, which may be regarded as market byproducts. Cellulose acetate and propionate, methyl and ethyl cellulose and the cellulose-phenol resins are examples of the products that might be made from surplus cotton.

May Extend Term

The use of the term "agricultural byproduct" may be extended in another direction. It is logical to think of a byproduct as something made in plant machinery otherwise idle. Certainly this should be permissible when the same raw materials are used as are employed for the preparation of the principal products. This is the case when agriculture turns to the cultivation of new crops on land no longer needed for the production of the principal products, because the same raw materials, sunshine, air and moisture, with a minimum of soil fertility, are used in each case. And here the imagination can run riot, because the American farmer does not begin to supply all of the materials of agricultural origin used and demanded by the American consumer. Sugar, rubber, paint and varnish oils, paper and alpha cellulose, and fibrous cellulosic materials are only a few of the agricultural products for whose supply the American consumer is largely dependent upon farmers of other countries. It is most enlightening to take such a commonly used text as Hill's Economic Botany and from it prepare a list of the farm products imported. Can the American farmers produce some of these materials in an economical manner? Strangely enough our knowledge in this field is terribly inadequate. Here and there someone has done a little work with one or two such crops, and the results have in many cases been highly encouraging. But the individual farmer usually can not do much to improve his situation by undertaking an unorthodox activity; he is forced by circumstances to follow the common path. And there are not many farmers with the time and money needed to carry on an educational and promotional campaign to get other farmers to join in a new enterprise. It is much easier to continue to grow corn or wheat or cotton and rely upon governmental generosity for the balance of his needs for a subsistence.

The present unsettled conditions in world trade have again offered an opportunity for the American farmer to seek new markets for his present crops or markets for new crops he might grow. The first World War paved the way for American self-sufficiency in industrial chemicals. Will this one produce a similar change in agriculture, the oldest chemical industry? The opportunity is at hand and aggressive leadership might easily arise to take advantage of it. It will be a situation worth watching.

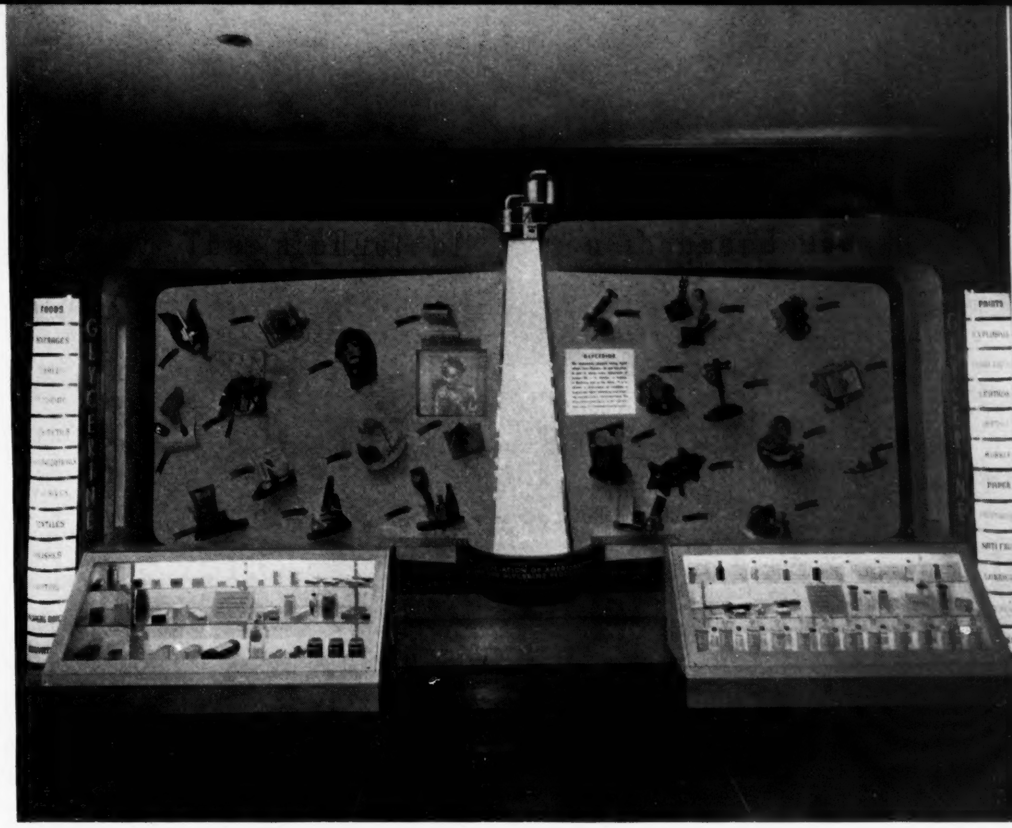
There are signs that such leadership is arising. In many localities in several sections of the country there are concrete examples of farmer-initiated and farmer-operated programs showing what he is doing to improve the marketing of his products. In Idaho the co-operative potato marketing associations are carrying on a splendid program. Only the best of the potatoes are sold for table use, and these are now going out in well marked and attractive packages, this year many of them being 10 and 25 pound paper bags especially designed for this use. These potatoes are of the highest quality and of uniform size and shape. These associations are looking for markets for the culls and lower grades, markets which will not permit the return of these lower grades to the competitive food channels. Large amounts are already being used for the production of potato flour and meal, and more recently the production of potato shreds has been undertaken, both developments being privately owned and operated. The associations are particularly interested in the use of these culls for the manufacture of industrial and power alcohol, because of the large volume that might thus be utilized and because this use clearly does not permit return of such potatoes to the food markets. Potato starch, now made in factories in Maine, also supplies an attractive potential market, particularly now that shipments of potato starch from other countries has become somewhat uncertain.

Dairy Co-operative Members

Many of the same farmers who have participated in these marketing co-operatives in Idaho are also members of dairy co-operatives. In particular the Upper Snake River Valley Dairymen's Association has made important progress in the marketing of dairy products. In its plant at Idaho Falls only sweet milk is processed. After the butter fat is removed, the skim milk is treated to recover a high quality rennet casein which is shipped to eastern plants for the manufacture of buttons and the like. The remaining whey is evaporated and the dried powder sold for use in poultry rations. Only the water is thrown away.

Many of these co-operatives are operating under the soundest business management which is continually searching for the means to improve the welfare of its farmer members. Important progress has already been made in the profitable utilization of byproducts and even more rapid progress is to be expected in the future.

New Applications for Chemicals and Their Derivatives Is an Old Story in Chemistry. A Much Wider Industrial Vista Is Now Being Eyed By Glycerine Producers Through New Uses Developing for Alkyd or Glycerine Phthalate Resins. Many of These Major New Uses Are Described.



Preview of glycerine exhibit at National Chemical Exposition.

USE OF GLYCERINE

In New Chemical Specialties

By Georgia Leffingwell, Ph.D., and Milton A. Lesser, B.Sc.

THAT glycerine holds an essential place in our national economy is well evidenced by its inclusion in the recent listing of one hundred and fifty most important industrial chemicals (1). But to appreciate the wide diversity of application already achieved by this unique fluid, one need only check the recent industrial and patent literature. A cross section of such developments reveals the versatile role played by glycerine in new and highly varied products.

Both in physical properties and chemical structure glycerine is truly a polyfunctional alcohol. Some industries employ glycerine for one or more of its inherent properties such as its hygroscopicity, viscosity, solvent powers, low freezing or high boiling points, safety or softening action. In other instances, its chemical properties are utilized. Since glycerine is the most important of the polyhydric alcohols, the liquid finds major uses in the manufacture of synthetic resins, and a host of important derivatives.

As a major ingredient of alkyd or glycerine-phthalate resins, glycerine continues to be a basic essential in the modern paint, varnish and lacquer industry, particularly for finishes requiring extreme durability. But far from being limited to use in coating compositions, these resins, suitably modified, are finding wide application in many other diverse fields. High dielectric strength electric insulation is obtained by the use of alkyd resins to bind mica into certain moulded parts.(2) Such glycerine-containing resins have long been employed in making electrical insulating materials. However, in a recent patent(3) an arc-quenching chamber for electrical switches is specified to have gas-emitting walls of glycerine-phthalate condensates.

These resins have also begun to find important uses in printing inks, but, perhaps even more significant is the growing utilization of such products for securing special finishes on textiles. By the use of these resins, it is possible to produce permanent effects and improvements not otherwise obtainable. Quite recently it was reported(4) that a new process had been developed, using oil-modified glycerine-phthalate resins, for making fabrics transparent and impermeable to fluids, as well as at the same time increasing their gloss. Furthermore, the process is said to impart excellent flexibility, soft handle, freedom from cracking or powdering and objectionable tendering, and may be used on dyed or printed as well as undyed textile materials such as silks, rayons and cottons.

Of course, glycerine, as such, is recognized as a standard ingredient in many phases of textile processing and in many textile specialties. Typical is a potentially valuable composition for treating textile materials to protect them against micro-organisms which cause mold growth and rotting. Complex copper compounds for this purpose may be prepared by treating glycerine with a copper salt in the presence of a caustic alkali solution.(5) In another instance, a gasoline-proof, flexible fabric can be made by coating a sateen base with a mixture of glue, glycerine, water and sorbitol. The coated fabric is then passed over heated drums and a wash of aqueous formaldehyde is applied.(6) Interesting, too, is a composition for waterproofing aprons and table covers,(7) consisting of:

Refined linseed oil	4 parts
Camphorated turpentine	4 "
Kerosene	6 "
Castor	4 "
Glycerine	2 "
China wood oil	1 part

Artificial rubbers and rubber substitutes have begun to loom large in the national economy, and glycerine and its resins are finding increasing use in connection with the formulation of such products. One, (8) with rather specialized uses, is soluble in mineral spirits, and when applied to a surface, produces a tough, water-resistant, flexible film. This

rubber-like material is produced by heating castor oil until it jells and then treating with glycerine. This reaction product is then processed with an unmodified oil-soluble resinous condensation product of a phenol and an aldehyde.

More recently, a new "synthetic" rubber which can be used as a substitute for the natural product was patented by a woman inventor.(9) This material is prepared from such readily available substances as gluten, turpentine, sulfuric acid and glycerine. When mixed together and heated, these ingredients react to form a rubber-like, elastic composition which, according to the patent claims, can be vulcanized like natural rubber to any desired degree of toughness and hardness. Ellis(10) has also prepared modified glycerine-phthalic acid resins which may be used in substitutes for rubber, leather and other like materials. Glycerine is also an important ingredient of the several rubber-like products described by Kittredge.(11)

Glycerine alone or in simple combination has long been recognized as a suitable agent for preserving rubber, but the following is a rather unusual, interesting combination for treating such materials to maintain their softness and suppleness:

Glycerine	80 parts
Almond oil	4 "
Lavender oil	4 "
Sugar	4 "
Petrolatum	3 "
Lemon peel	2 "
Lemon juice	3 "

According to the patents,(12) glycerine and lemon juice are the most important ingredients, the lemon peel being boiled in the mixture of oils when such are added, as in the above example.

In the manufacture of specialty paper products such as tissues, towelling or the like, the several properties of glycerine are often utilized to make these items strong, soft, supple and absorbent. The value of such usage has been verified by the studies of Hardenburg.(13) Recent developments have continued to take advantage of these glycerine qualities. A case in point, a process for rendering paper soft and flexible,(14) utilizes a solution containing about 72-80 fl. oz. of water, approximately 28 fl. oz. of glycerine and about 14-16 oz. of a finely divided inorganic filler such as magnesium silicate. Paper of high wet and dry strength can be made by impregnating flexible paper with glue containing glycerine, the sheet dried and the glue air-hardened. After this, the glue is treated with formaldehyde, under controlled conditions, to render the surface water-insoluble.(15)

In paper adhesives, by its hygroscopic and other actions, glycerine serves to maintain the flexibility and holding powers of the bonding agents. In making remoistening gummed tapes, for example, where a conversion product of British gum is the basic ingredient, glycerine is employed in quantities ranging from 1 to 10 per cent.(16) Another adhesive,(17) suitable for use on the edges of paper sheets, can be made by subjecting the following mixture to gentle heating:

Glycerine	5 parts
Venice turpentine	5 "
White flake glue	32 "
Acetic acid	57 "

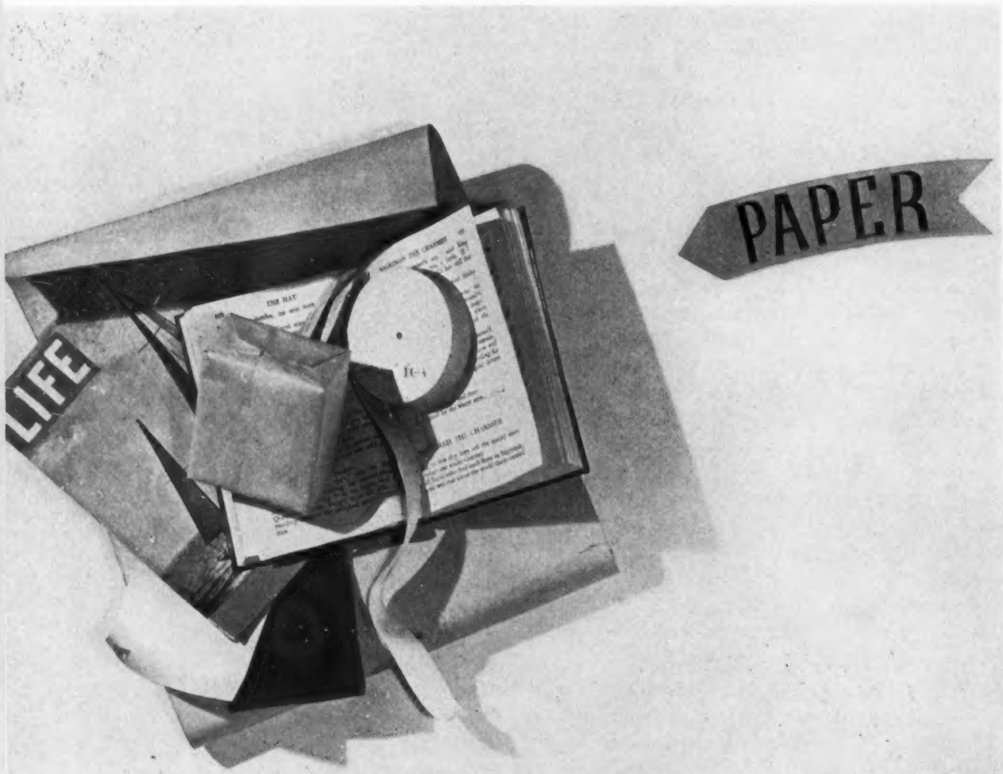
A recently patented preparation(18) might be called an "adhesive aid." According to the specifications, a fused sugar and glycerine mixture may be used as an addition to an adhesive such as glue to make it rapidly and highly adhesive on heating and quick setting on cooling. Glues so treated are suitable for use on paper, cloth, etc.

Processes for making paper and other fibrous materials impermeable to such substances as water, grease, organic solvents and gases frequently employ glycerine. Usually glycerine serves as a softening agent in such combinations, but often, as in cases of grease-or gas-proofing, the fluid itself acts as a major barrier material or as an ingredient of the resins employed. Glycerine similarly enters into processes for making fire-resistant combinations. Sometimes two types of proofing are achieved by the same or adjunct combinations.

Frequent illustrations of such glycerine applications are readily available in the literature.(19, 20) In one process for water-proofing paper,(21) a composition of chlorinated rubber, a plasticizer, a wax, and a drying oil-modified condensation product of glycerine and phthalic acid is used. The composition, dissolved in a volatile hydrocarbon solvent, may be applied by brushing or spraying or by passing a continuous web of the material through a bath of the solution. To make paper fire-proof, it may be impregnated under pressure with a flame-proofing composition containing ammonium sulfate protected by a network of glycerinated gelatin. Further treatment with a rubber coating material makes the paper waterproof as well as fireproof. Such a paper is particularly suitable for making bags or boxes or for wrapping.(22) Another fireproofing composition, this one applicable to various materials such as fabric, wood and paper, is obtained from the reaction of an aluminum salt, ammonia and glycerine. Adhesives, stiffening agents, paints, plasters and other materials may also be fireproofed by replacing some or all of the water by the fire-proofing solution.(23) Where fireproofing treatment is given to transparent films or sheets such as those of gelatin, casein, or the several cellulosic materials, the treated sheets are softened and their flexibility maintained by the use of glycerine.(24)

Special types of hose, such as for gasoline where the solvent-impervious material is specified as cellophane, utilize

Miniature three dimensional figure typifying the use of glycerine in the paper industry. These figures are a part of the exhibit of the American Association of Soap and Glycerine Producers at the National Chemical Exposition in Chicago next month.



glycerine as a plasticizing agent for the cellulosic material.(25) Glycerine is the standard softening material for cellophane and kindred transparent sheetings. In another instance, glycerine serves a more essential purpose for treating the inner surfaces of gas-distributing conduits. According to the patent(26) on this usage, glycerine mixed with a viscosity-reducing agent is applied to the interior of a gas conduit, and serves as a sealing and dust laying material.

With modern technology advancing so rapidly and the use of new and varied chemicals increasing constantly, the problem of industrial safety is assuming major importance. Many special materials designed to meet these new needs have been developed during recent years, and in many of these highly specific products, glycerine performs a variety of useful services. In the case of skin protectives, for example, glycerine acts as a plasticizing agent for the protective film, as an emollient and softening agent for the skin, and in many cases, as a barrier to the drying solvents and irritating chemical substances.

The prime purpose of industrial skin protectives is to form a barrier layer on the hands and other dermal areas to prevent corrosive substances and industrial grime from working into the skin, and so to prevent industrial dermatoses. (27) Such products are applied by workers before they start on their jobs and should wash off easily at the end of the working day. The composition of the skin protectives will vary to some extent according to the class of industrial material being handled. One common composition,(28) however, contains:

Lanolin	20 parts
White chip soap	8 "
Glycerine	2 "
Petrolatum	3 "
Zinc oxide	2 "
Water	65 "

This may be perfumed with eucalyptus and a "carbolic" type odor.

Another skin protective of the same type is as follows:

Petrolatum	13 parts
Glycerine	5 "
Talc	12 "
Potash soft soap (40%)	10 "
Water	60 "

Formulas for other, more complex, glycerine-containing skin protectives are available in the patent literature.(29)

The eye protection offered by goggles is often minimized because the lenses fog from perspiration and moist heat. Glycerine compositions, usually in the form of pencils, are useful to combat this condition. One composition, to be molded into crayons, and said to have been found satisfactory for both winter and summer use, (30) can be made from:

Glycerine	325 parts
Sodium hydroxide (sticks)	50 "
Stearic acid	625 "

Heat the glycerine to the boiling point, dissolve in the alkali and add to the previously melted stearic acid, with constant stirring. When action stops, pour into molds.

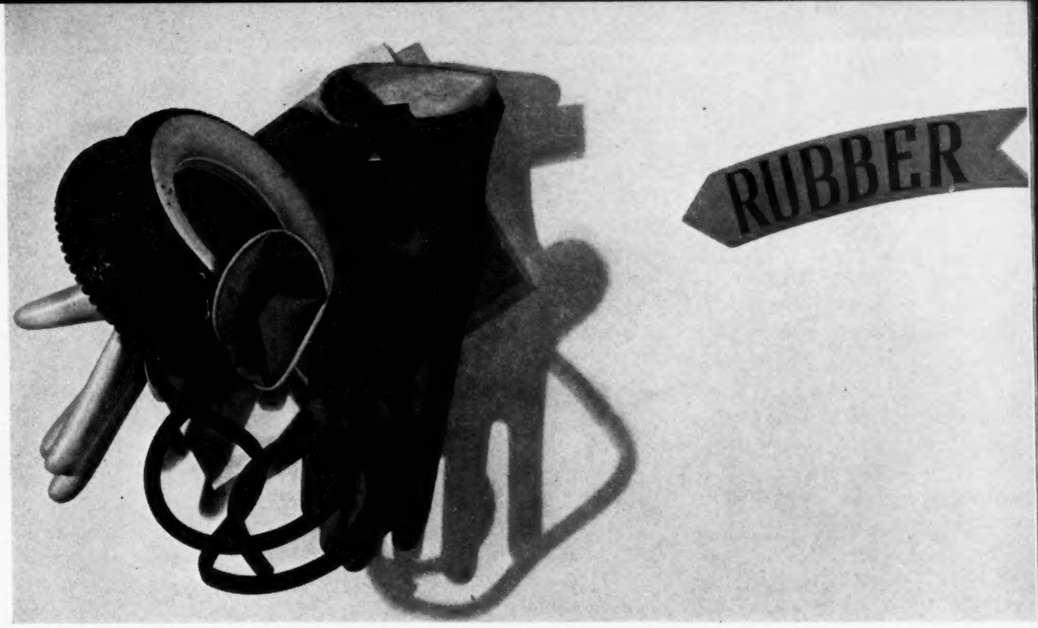


Figure typifying use of glycerine in rubber industry.

When toxic or explosive gases or vapors are used in industrial processes, extra precautions are essential to minimize the dangers of these hazardous substances. Equipment in which treatments with these volatile materials is carried out should be gas-tight. A satisfactory sealing medium for such purposes is a non-drying jelly made from equal parts of gelatin, glycerine and sugar dissolved in a sufficient quantity of warm water to set to a thick, firm jelly upon cooling.(31)

Static formation is another major hazard in many industries and here, too, glycerine has proven useful as a safety aid. Since static electricity is usually generated by belt friction and slippage, treatment of this part of the equipment is necessary. Simple mixtures of graphite and glycerine have proven to be excellent for reducing friction and preventing static. (32) Others use a solution of equal parts of glycerine and water, and by applying the liquid as often as is necessary, the belts are maintained in a proper, moist condition.(33)

Before concluding this brief review, mention should be made of a rather unusual application for glycerine in the production of a translucent screen for use in viewing projected images. Land,(34) who invented "Polaroid," has recently developed such a screen which consists basically of a sheet of transparent material such as a cellulose acetate composition. The unique feature is the fact the composition contains distributed globules of glycerine as an integral part of the screen.

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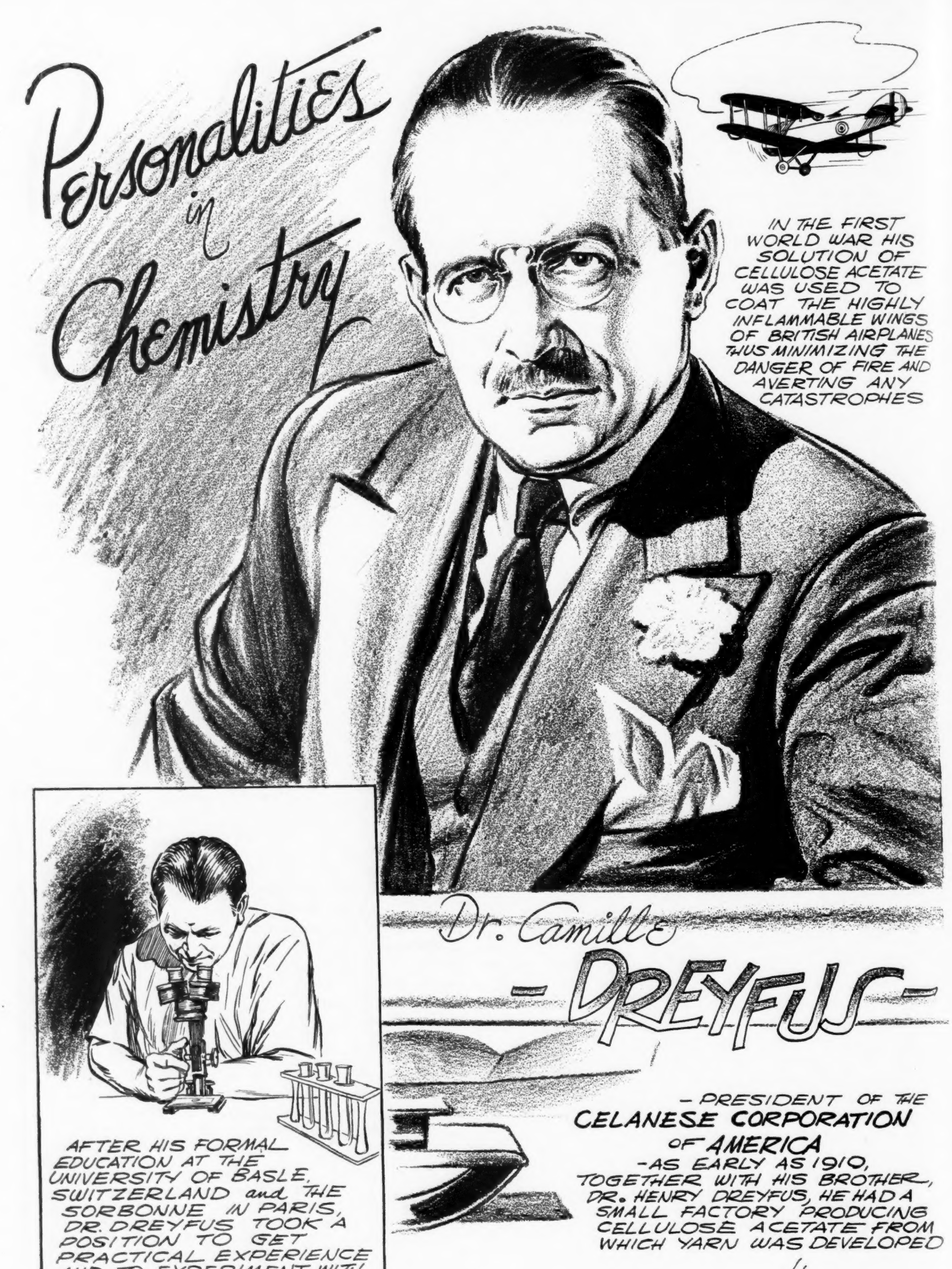

Personalities in Chemistry
IN THE FIRST WORLD WAR HIS SOLUTION OF CELLULOSE ACETATE WAS USED TO COAT THE HIGHLY INFLAMMABLE WINGS OF BRITISH AIRPLANES THUS MINIMIZING THE DANGER OF FIRE AND AVERTING ANY CATASTROPHES
Dr. Camille
- DREYFUS -
- PRESIDENT OF THE CELANESE CORPORATION OF AMERICA
- AS EARLY AS 1910, TOGETHER WITH HIS BROTHER, DR. HENRY DREYFUS, HE HAD A SMALL FACTORY PRODUCING CELLULOSE ACETATE FROM WHICH YARN WAS DEVELOPED
!!
AFTER HIS FORMAL EDUCATION AT THE UNIVERSITY OF BASLE, SWITZERLAND and THE SORBONNE IN PARIS, DR. DREYFUS TOOK A POSITION TO GET PRACTICAL EXPERIENCE AND TO EXPERIMENT WITH NON-INFLAMMABLE CELLULOID

DR. CAMILLE DREYFUS

By

A. D. McFadyen

THE lofty distinction of pioneering in a centuries-old industry belongs to Dr. Camille Dreyfus. Until his appearance on the industrial scene the use of cellulose acetate in textile manufacturing was practically non-existent. Today the Celanese Corporation of America, of which he is president, and similar companies in Canada and England stand as monuments to his perspicacity and the constantly widening use of Celanese textile yarns indicates the public's acceptance of the valuable contributions he has made.

Dr. Dreyfus was born in Basle, Switzerland, the son of a banker. He received his college education at the University of Basle and the Sorbonne in Paris, acquiring both Master and Doctorate degrees at the former institution. His formal training completed, the youthful chemist decided to get some practical experience and took a position with an establishment in his native town. Together with his brother, Dr. Henry Dreyfus, he was already interested in the possibilities inherent in a non-inflammable celluloid. They made experiment after experiment and in 1910 a small factory which they acquired was producing cellulose acetate. Half of their output went into cinema films, the remainder into toilet articles. Unobtrusively, the Dreyfus brothers were going along with their small daily production, but dreaming of a fiber which could be made from cellulose acetate. They beat a path to their laboratory as test after test was made. Finally, at long last, specimens of the yarn were available. But by the time they were ready to introduce it to a gaping public the World War intervened, and their factory had to be adjusted to war needs. The war was not old when the British Government called upon Camille. It had been discovered that by coating the highly inflammable wings of airplanes with cellulose acetate the danger of fire was minimized and many catastrophes in the air could be averted. And the Dreyfuses had the solution which would do the job. Camille journeyed to England, and, after negotiations with the British Government were concluded, established a plant there. Shortly after, the representative of the United States Signal Corps in London arranged for Camille to come to this country and build a plant here which would produce cellulose acetate for airplanes. The result was that in 1918 the American Cellulose and Chemical Manufacturing Co. was incorporated, and a manufacturing plant established in Cumberland, Maryland. Here, however, Fate turned its back on Dreyfus. In November of the same year an armistice was declared among the warring nations, and with the cessation of hostilities came an end to the important use of cellulose acetate in aviation.

Left high and dry with considerable plant investment and a small market for his produce, Dreyfus went back to the problem which had been occupying him at the outbreak of the war—Celanese. The fiber was available, but the commercial production of the yarn was a different matter. In order to make a commercial success of this entirely new product it was necessary to develop methods of treatment adapting it to both dry and wet spinning, overcome obstacles of machinery, as well as perfection of new dyes for it. Further, a doubting industry had to be convinced that it could be woven and knitted successfully. This was accomplished only after much hard work against terrific odds.

Late in 1924 the Cumberland plant began to turn out Celanese. Such has been the success of the Celanese product that a second plant has been constructed at Pearisburg, Virginia.

Camille Dreyfus at all times has been at the head of the Celanese enterprises, and particularly as technical director. To date 223 inventions of Camille Dreyfus have been patented in this country, most of which relate to cellulose acetate production. His brother, Henry, now residing in England, and who with him is co-managing director of the Celanese companies in the United States, England and Canada, is also responsible, directly or indirectly, for many patents in the same field of operation. Dreyfus was president of the American Cellulose and Chemical Manufacturing Co. from 1918 to 1925, when the corporate title was changed to Celanese Corporation of America, and has held the same position with the successor company. He has been joint managing director of British Celanese, Ltd., since 1916 and president of Canadian Celanese, Ltd., since 1926. Both Camille and Henry Dreyfus have been honored by scientific societies and government agencies both here and in Europe. In 1939 Dr. Henry was awarded the Perkin Medal of Great Britain, one of the highest scientific awards in the world, and this year Dr. Camille was given the Modern Pioneer Award by the National Association of Manufacturers. Dr. Camille is a member of the American Chemical Society and of the Society of Chemical Industry of Great Britain. Also, he is an Officer of the French Legion of Honor, a reward which came to him as a result of his contributions to the Allied cause during the last World War.

Although there is already so much of the results of the inventive genius of Camille Dreyfus apparent in industrial and chemical fields, he is by no means content to sit back and merely reap the rewards of his labors. As he himself explains, "the possibilities and uses of cellulose acetate have just been scratched. By constantly keeping at our research we will develop new and better products and improve those we have." And that is just what Camille Dreyfus is doing now.

DUREZ PHENOL PLANT

To Employ Raschig Process

A Process So Intricate That Many Chemical Engineers Refused To Consider It When First Offered Some Years Ago, Is Being Utilized in What Has Been Described As the World's Largest Plant employing the Raschig Process for production of Phenol. Project Has a Defense Aspect, Inasmuch As Phenol Is a Raw Material for Certain Types of Explosives. A Full Description of Process Including Flow Sheet of operations Is Incorporated in This Article.

TREMENDOUS interest on the part of chemists and chemical engineers has been in evidence for nearly two years concerning the details of construction and operation of the Raschig process for the manufacture of phenol. The largest plant of its kind in the world has just been opened, according to an announcement made last month by Durez Plastics & Chemicals, Inc. The new phenol plant is, of course, a unit of the company's large plastics plant at North Tonawanda, N. Y. Built under the supervision of scientists who developed the process being employed, the plant has been under construction for two years and cost more than $2,000,000 to erect and equip.

According to engineers of the company, the new plant not only assures an independent and controlled source of the purest phenol obtainable in this country and makes possible improved plastics, but also has very definite ordnance value as well since phenol is used in the making of certain explosives. In view of the extensive rearmament program of the United States now being placed in operation the new plant is specially interesting and timely at this particular moment.

The advantage of the Raschig process, discovered by a group of German chemists a few years ago, is that it produces the highest grade of phenol with a minimum of by-product, according to engineers of

the company. Processes heretofore employed produce from two to five pounds of by-product to one pound of phenol, while the Raschig process develops less than one-tenth of a pound of by-product for each pound of phenol. The Durez new phenol plant is the largest plant of its kind in the world and has a capacity of 15 million pounds a year.

The importance of the new plant to the plastic industry was pointed out last month by Harry M. Dent, President of Durez Plastics & Chemicals, in a formal statement.

"Our operations," he said, "are on a mass-production basis since we supply hundreds of molders and large industrial users of phenolic plastics. Phenol is the most important of our raw materials, and we use millions of pounds of it a year. Our new phenol plant not only assures us of an adequate supply, but gives us a product that is far above the U. S. P. standards. This superior phenol will result in plastics with improved physical and molding qualities, which will in turn mean new uses for our plastics."

Several Views of New Durez Phenol Plant. Opposite page, upper left, shows longest nickel pipe line in U. S., which carries phenol from new plant to molding compound plant. Left. Vapors enter contact furnaces here direct from vapor mixer in first stage of process. Above, checking at pure phenol flow meter in distillation building.

Importance In Plastics

The opening of the new $2,000,000 plant for the synthetic production of phenol is a striking example of the rapid development of the plastics industry, and the vast quantities of raw materials the industry requires to meet the growing demand for plastics.

In 1921, when Durez was first produced, the production of synthetic resins, which are molded into plastics, was only 2,000,000 pounds. Last year the production of synthetic resins was more than 200,000,000 pounds. And in recent years the production has climbed at a steeper rate as improved plastics have made possible applications in ever widening fields.

Of the many different types of plastics, the phenolic, thermo-setting group has had the fastest growth. Low-priced, and the first to be produced on a mass production basis, these Durez plastics have been admirably suited to industrial uses. A great volume of the company's output goes into such varied articles of daily use as automobiles, electrical appliances, brake linings, paints, plywood, cameras, adding machines, telephones and radios.

The mammoth plant that will produce the Durez phenol is one of the most amazing chemical units in the world. Housed in several huge buildings, the tremendous towers and distillation units are joined with forty miles of pipe, 3 miles of which are made of either glass, porcelain or rubber, to withstand the action of acids at high temperatures. Since the stoppage of action at any one point might disrupt the process, duplicate equipment has been installed at every stage for use in case of trouble.

The process itself is so intricate that many leading chemical engineers in this country refused to consider it when it was first offered here a few years ago. Briefly it consists—first in passing a vapor mixture of benzene hydrochloric acid and air through a catalyst. This produces a mixture of chlorinated benzenes from which mono-chlor-benzene is distilled in the pure state for use in the second step; and, second, a vapor mixture of mono-chlor-benzene and steam are passed through a catalyst which produces phenol and regenerates the hydrochloric acid. These two stages actually form a completely continuous process, and during the process most of the materials formed and the catalysts are recovered for re-use. The process can be likened to a game of ring-around-a-rosie; the process making a continuous circle with the phenol being extracted or drawn off as it is formed, and new materials and new catalysts added as the original ones seem to wear out or become used up.

Technical Description of Operations

This process, invented by Dr. W. Prahl and Dr. Wm. Mathes of the Dr. F. Raschig G.m.b.H. of Ludwigshafen a/Rh, Germany, in 1930 functions in two, catalytic, vapor phase stages.

In the first stage, benzene is chlorinated with hydrochloric acid and air, in the presence of a catalyst, with the production of mono-chlor-benzene.

In the second stage, mono-chlor-benzene is hydrolized with water, in the presence of a catalyst, with the production of phenol and hydrochloric acid.

The first stage reaction proceeds at about 230 C., is exothermic, and is represented by the following equation:

$$C_6H_5 + HCl + 1/2O_2 = C_6H_5Cl + H_2O$$

Since but about ten per cent. of benzene is converted in one pass through the catalyst and since small quantities of poly-chlor-benzenes are formed, and since a trace of oxidation takes place, the actual products of the first stage reaction are: C_6H_5, C_6H_5CI, polychlorbenzenes, CO_2, CO, N_2 and H_2O so that several orderly steps are required to effect the separation and recovery of the products of the reaction. This is accomplished by continuous fractional condensation whereby the chlorinated benzenes and part of the unreacted benzene are collected in liquid form for the separate recovery, by continuous fractional distillation, of benzene, mono-chlor-benzene and a mixture of the poly-chlor-benzenes. A part of the balance of unreacted benzene vapor is condensed for re-use, in a final condenser, while the remainder is recovered by scrubbing the tail

gases with an organic absorbing liquid from which benzene is continuously distilled and condensed for reuse.

In practice the first stage system operates by drawing the first stage reactants in the vapor state, at slight negative pressure, in succession, through contact chambers, a fractional condensing tower, and a final condenser. When and as conversion to form first stage products takes place, these products condense and are removed from the fractional condenser, which operates at a temperature slightly above the boiling point of benzene. The benzene vapors which pass from the fractional condenser are then condensed and recovered from the final condenser and tail gas recovery system.

The second stage reaction proceeds at about 425 C., is endothermic, and is represented by the following equation:

$$C_6H_5Cl + H_2O = C_6H_5OH + HCl$$

Since but about ten per cent. of the mono-chlor-benzol is converted in one pass through the catalyst and since more water is present than given by the equation and since traces of side reaction products are formed, the actual products of the second stage reaction are C_6H_5OH, HCl, H_2O, oxydiphenyl and di-phenyl-ether, so that several orderly steps are required to effect the separation and recovery of these products. By heat interchange between the sensible heat of the products of the reaction and the azeotropic vapor mixture of the reactants, the products are first cooled to about 200 C and then further cooled in a fractional condenser by being required to vaporize a liquid mixture of the reactants. Next by further fractional condensation a water solution of HCl (15%), and containing about 5 per cent. of the phenol formed, is condensed and recovered. Leaving the fractional condenser the vapors contain about 95 per cent. of the phenol formed, together with all the azeotropic mixture of the reactants and from which the phenol is dissolved by scrubbing with hot water under temperature conditions such that the azeotropic vapor mixture of the reactants remains in the vapor state to be later heated to reaction temperature and passed through the second stage contact chambers.

Central control station in laboratory. Siren blows here and at point of trouble. Red light burns until trouble is eliminated.

The products of the second stage reaction are thus collected in the form of a recovered HCl solution (15%) containing dissolved phenol and a water solution of phenol. These phenol solutions are separately extracted in continuous countercurrent fashion, by benzene, which extraction step constitutes the entry point for the benzene required in the first stage reaction. After benzene extraction to remove phenol the recovered HCl solution passes to HCl vaporizers to supply that reactant of the first stage reaction while the extracted water solution of phenol is reheated, stripped of benzene, which is condensed and recovered, and then cycles back to the phenol scrubber to absorb more phenol.

The combined benzene-phenol solutions from the extraction steps pass to a continuous fractionating still. The distillate from this column delivers benzene vapor to constitute that reactant of the first stage reaction while the out-flow from this column consists of crude phenol (97%) which is subsequently recovered in pure state by continuous vacuum distillation.

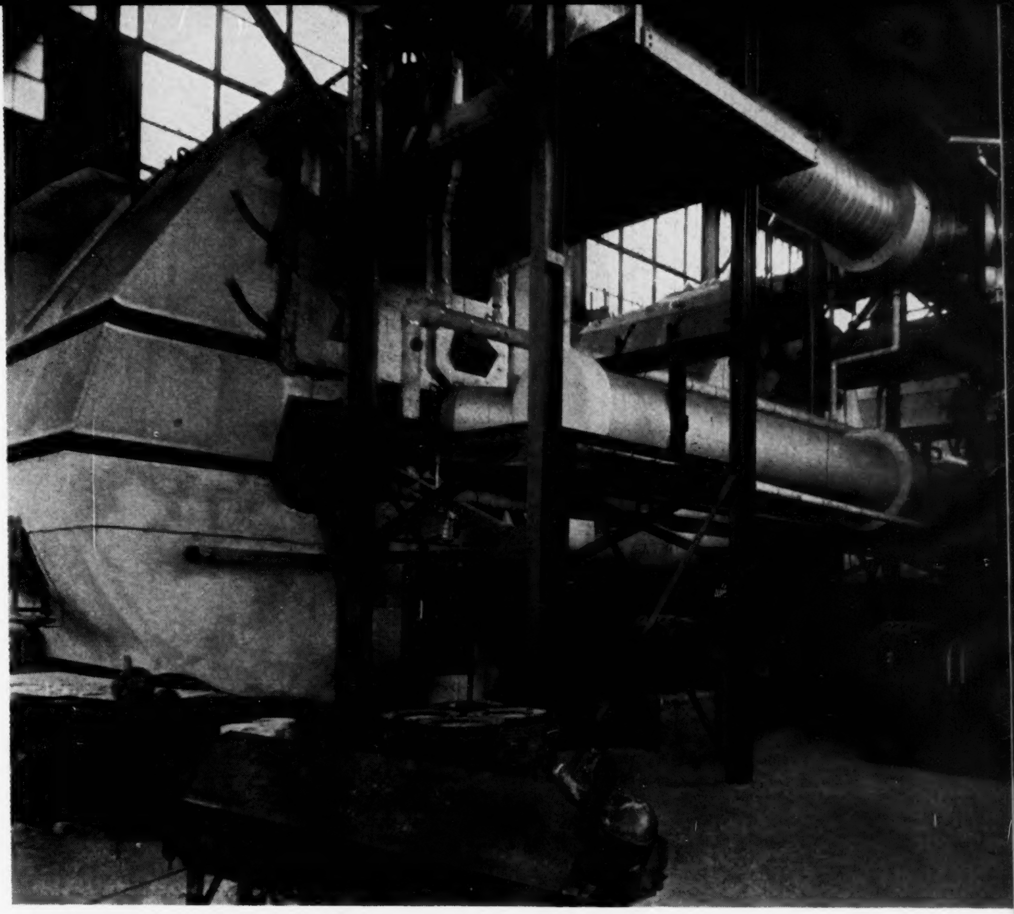
In practice the second stage system operates by cycling the reactants in vapor state, at slight negative pressure, in succession through contact chambers, heat interchangers, a vapor superheater, a fractional condensing tower and a scrubbing tower. When and as conversion to form second stage products takes place, these products condense and are collected from the fractional condenser and the scrubbing tower. Throughout the second stage system efficient heat interchange principles are utilized to avoid condensation and re-evaporation of the reactants and to utilize the sensible heat of the products of the reaction. An examination of the two reactions, above, will disclose the production of phenol from benzene and air by utilizing hydrogen chloride, in a sense, as an oxygen carrier.

From this brief description of the process, which is continuous and which involves a regenerative cycle with respect to hydrochloric acid, it would appear that the many successive steps necessary require an elaborate system of exact control and synchronization with each other. Such is not the case in practice; on the contrary, in both stages of the process the reactants in the vapor state are caused to move in succession through contact chambers, heat interchangers or heat recovery apparatus, a fractional condensing tower

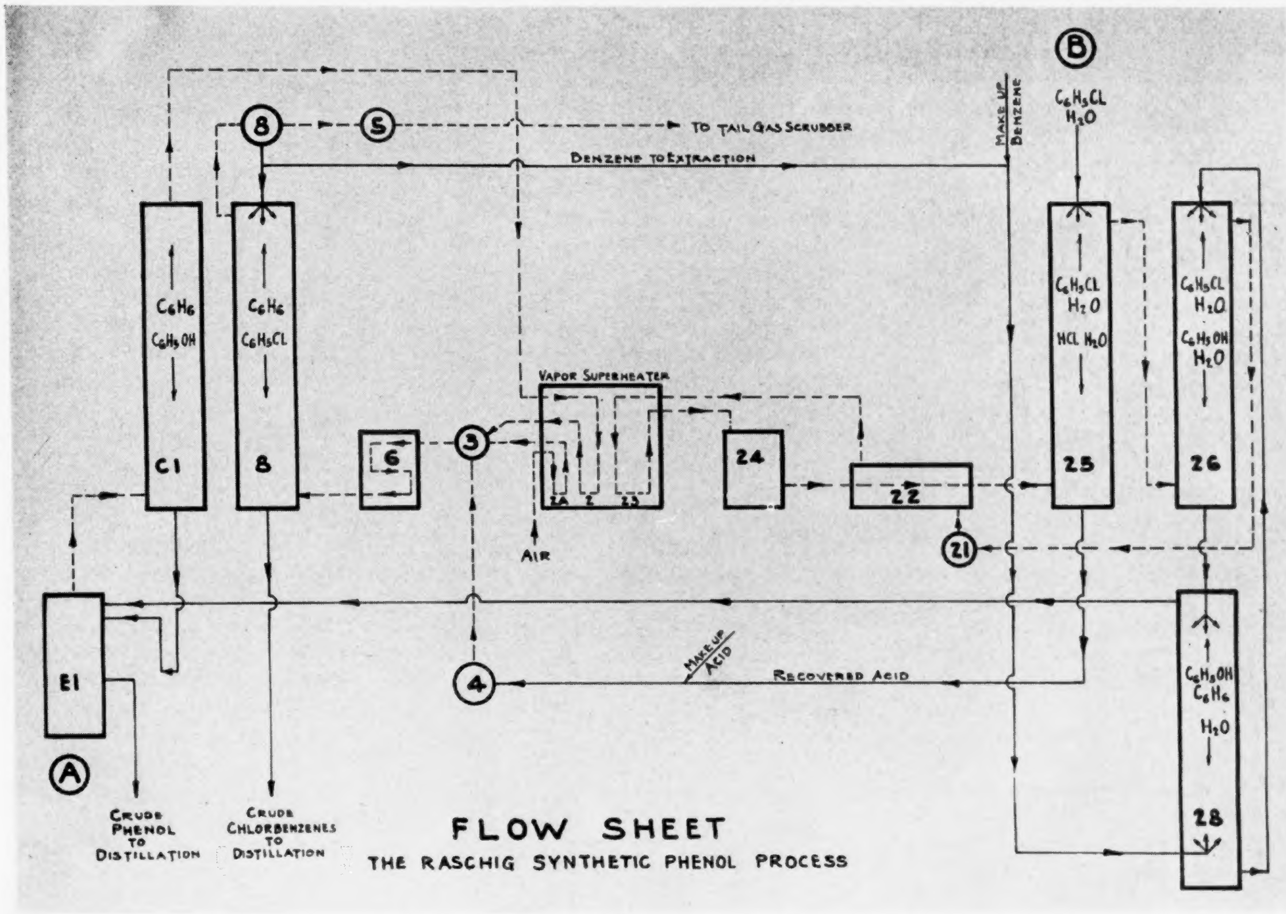
a final condenser, or its counterpart, and vaporization apparatus. Only when and as conversion takes place do the products of the reactions condense and flow from the condensing equipment to be collected. If no reaction took place, steam, water and electrical energy would be expended only for vaporizing, moving and condensing the reactants but the reactants would be substantially recovered in original form, minus, of course, mechanical losses.

Reference to the flow sheet will clarify the operation of the process. Liquid flows are solid, vapor flows are dotted.

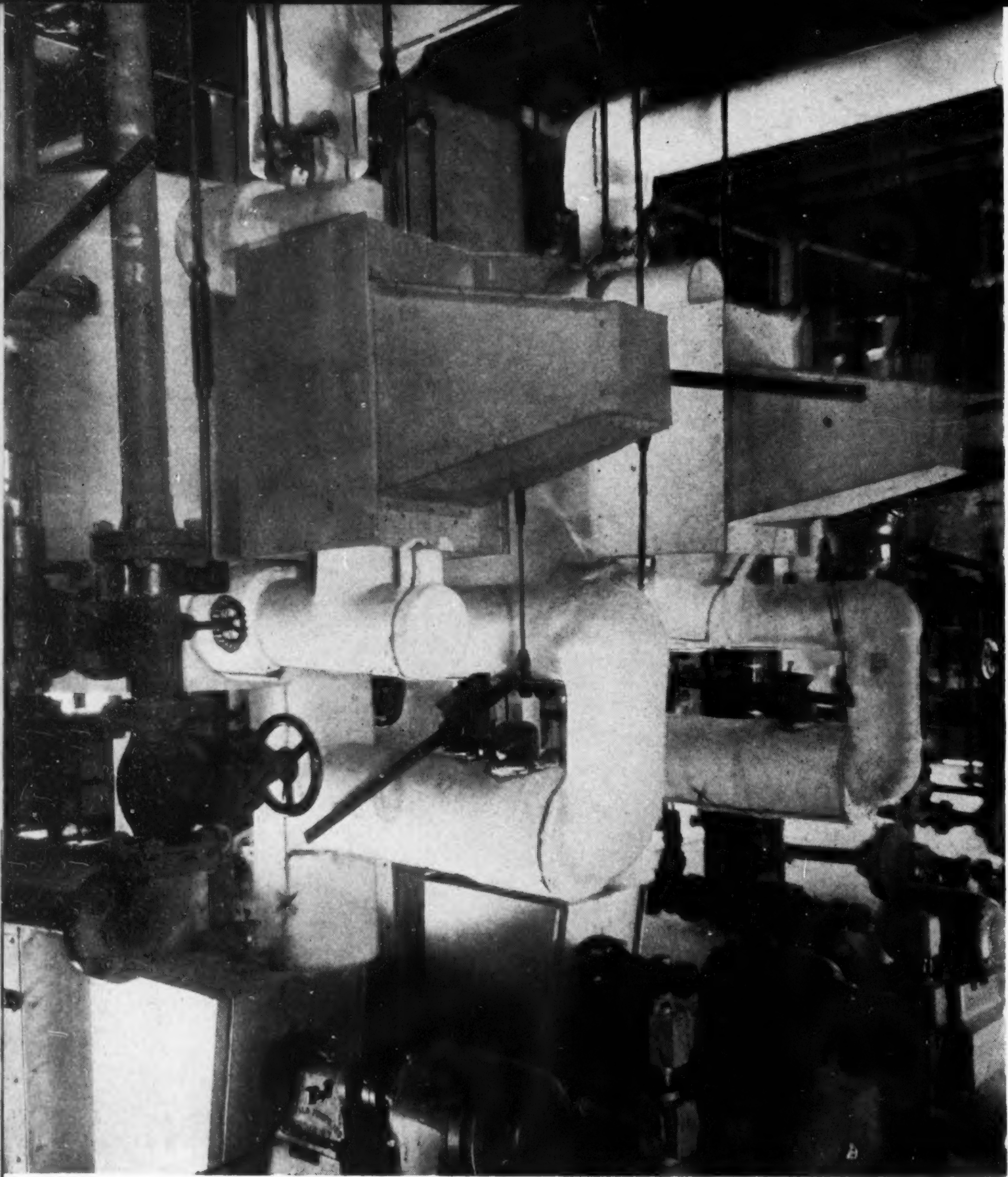
Starting at (A)—El is a steam heated tubular evaporator which is boiling benzene, from a mixture of benzene and phenol, into fractionating Column Cl. The benzene vapor passes through a tubular heater 2, in the vapor superheater, and then into vapor mixer 3. Hydrochloric acid is boiling from 4 into vapor mixer 3 and the air is being drawn into vapor mixer 3 through tubular heater 2A, in the vapor superheater. The mixture of these three vapors in proper proportion and at a temperature of about 205 C. passes into contact chamber 6 where chlorination takes place. The products from chamber 6 pass into scrubbing tower 8 wherein condensation to liquid form takes place to form crude chlorbenzene which flows from the bottom of tower 8 to storage for subsequent continuous fractional distillation. Above tower 8 is condenser 8 which condenses benzene vapor driven off in the tower, part of this distillate is used as reflux for the tower while the balance is used to extract phenol in the second stage. Item 5 is a suction fan which draws the reactants through the first stage system. This fan discharges into a scrubbing tower in which benzene is absorbed from the tail gases by a hydrocarbon oil from



Main view of first stage contact furnaces.



FLOW SHEET
THE RASCHIG SYNTHETIC PHENOL PROCESS



Crude phenol stills in distillation building.

which the dissolved benzene is continuously distilled for reuse.

Starting at B—a mixture of pure chlorbenzene and water is added into the top of scrubbing column 25 within which the products of the second stage reaction are circulated by a turbo-blower 21. The temperature conditions in column 25 are maintained such that the azeotropic mixture of chlorbenzene and water is formed to augment the vapors leaving the column. The excess water added at this point absorbs the HCl from the vapors and the recovered HCl solution (15%) flows from the bottom to be vaporized in the first stage system at 4. The vapors leaving the top of column 25 consist of chlorbenzene, water and phenol and pass into the bottom of the phenol washer 26 which is refluxed with hot water to dissolve out the phenol and which is operated at a temperature such that the azeotropic mixture of chlorbenzene and water remains in the vapor state. The phenol-water solution leaving the bottom of column 26 is passed through extractor 28 wherein the phenol is extracted by benzene. The phenol-benzene extract from the top of extractor 28 flows to evaporator El to supply the benzene vapor for the first stage while the crude phenol from the evaporator is sent to storage for subsequent purification by continuous vacuum distillation.

The chlorbenzene-water vapor leaving the top of column 26 is picked up by turbo-blower 21 and passed through tubular heat exchanger 22 to be raised in temperature by absorbing heat from the hot products of the second stage reaction coming from contact chamber 24. Leaving exchanger 22 the reactants lack about 100 C. in temperature so they are passed through tubular heater 23 in the vapor super-heater and then directly into the second stage contact chambers 24. Leaving chambers 24 the hot products exchange sensible heat with the incoming reactants and are thereby partly cooled. From the heat exchangers 22 the products go directly to the bottom of the acid recovery tower 25.

The process is of particular interest with respect to the following:—

1. For all practical purposes the process is regenerative with respect to hydrochloric acid as indicated by the equations and as evidenced by the fact that the normal operating efficiency of the HCl recovery cycle is about 97 per cent. This efficiency includes loss of HCl in the form of higher chlorinated benzenes and all mechanical losses in handling.
2. The process forms by-products to the extent of only one-tenth of a pound per pound of pure phenol produced, these being small quantities of poly-chlor-benzenes, di-phenyl compounds and tarry matter.
3. The first stage catalyst is truly selective towards benzene in that unsaturated compounds or toluene are not chlorinated but are oxidized to CO_2 and CO—thus no trace of cresols exist in the phenol which has a solidification point of 40.70 C. minimum.
4. Equipment items handling hydrochloric acid liquid, or vapor, are so designed that maintenance is reduced to a figure not above the maintenance encountered in the average chemical plant.

Economics Involved

Engineers of the Durez Plastics & Chemicals, Inc, point out that from the standpoint of plastics manufacture a surplus of by-products in phenol production is undesirable. As has been previously stated under the Raschig process less than one-tenth of a pound of by-product results from the manufacture of a pound of phenol.

To have employed the older methods of obtaining phenol would have meant such an accompanying volume of by-products that, as an official of the Durez company declared: "We would have found ourselves primarily in the chemical business instead of plastics."

It was to assure the company of an adequate and independent supply of purest phenol obtainable that Durez Plastics & Chemicals, Inc, obtained exclusive United States rights to the new Raschig process of making synthetic phenol.

Harry M. Dent, president of Durez, in discussing the relationship of the new plant to the plastics field stated:

"The history of plastics manufacture shows that as new and improved plastics have been made available, they have found a ready market in new applications. The demand now is for plastics that can be molded in large sizes. For various technological reasons, it has been necessary to restrict the moldings to relatively small units and therefore we have not yet seen such things as automobile bodies and airplane fuselages made of molded plastics. That, however, will come as we gradually develop our products and methods of using them. Our new phenol plant is just another of the steps toward that end."

A NEW APPROACH To *Research*

Quite Illuminating Were the Thousand-odd Answers from American Manufacturers Received by the New Research Advisory Service to the Question — "What New Product, Process or Material Might Industrial Research Develop That Would Be Valuable to Your Industry?" What Are the Possibilities of This Idea?

THE researcher's quest often is along a darkened road. Inventors and technicians never know exactly what the capricious public wants. Or what industry wants, for that matter.

But some new guideposts to give them some better directions are now being posted along this road. These may help research men from straying too far away from their principal task—that of supplying the everyday wants of industry.

It has remained for a banking institution—the Liberty Bank of Buffalo—to assemble all this information about the needs of industry. The bank's Research Advisory Service has listed about 600 of these wants. For example:

There is need for a chemical compound that can be applied to cotton textiles to make them wrinkle-resistant without impairing strength.

Something that will make wool goods absolutely shrink-proof.

A cheap anti-freeze that will keep coal from freezing during winter shipment.

Something that will make lumber really fireproof.

These are just a sample. Many are real, practical problems, condensed and boiled down in their simplest terms. There are some 54 problems proposed for chemistry alone. Some are just little stumbling blocks of industry. Someone has overlooked the way to get rid of them.

Vice President Bert H. White, who is director of the Research Advisory Service, received 1042 replies to this question:

"What new product, process or material might industrial research develop that would be valuable to your industry?"

The answers made a 375-page manuscript. He boiled it down into a 43-page summary, which has just been published in mimeographed form.

Some of these needs, listed under the heading of chemistry, are:

A chemical, catalyst, bacteria or enzyme which would produce hydration of cellulose. At the present time, cellulose is hydrated by mechanical means with a high consumption of power.

Alkyd resins are dependent on the price of glycerine. What the paint and varnish industry needs is a synthetic method of producing glycerine that would keep the price low.

By Hilton Hornaday

A safe, low cost solvent for the extraction of fats and oils would be valuable to the rendering industry.

Among the most valuable discoveries based on economic importance would be a process for converting wood into sugar. Chemically, the step is not a big one.

A substance is needed in the treatment of water which is harmless, tasteless and odorless, that will combine with chlorine to reduce its taste, will continue the activity of chlorine for a longer time than when used alone, and not to be a bacterial food.

A way to make metallic magnesium from the oxide rather than from the initial salt of magnesium chloride.

The thing that strikes one about Mr. White's survey is that he seems to have caught industry at a time when its executives were willing to take a moment, cast an eye over the past, and meditate a little on what lies ahead. Some were in a rather introspective mood. They took the attitude that a little self-analysis might do them good.

Why this mood? That is not exactly clear. Perhaps the war has something to do with it—the vague portents that the economic tides are about to shift again, pushing industry one way or another.

At any rate, the replies furnished a great cross section of how industry feels, especially as to research. Some executives were morose, quite ready to throw up their hands. There were mainly the men discouraged by the economic trends. Some even expressed the feeling that research was useless any longer. But these were much in the minority.

But the bulk of the letter writers, of course, said they felt chemistry's brightest days are ahead. Some executives told how their mighty industries were about to launch co-operative research ventures, with several industries supporting the project jointly.

The fact is no one had ever thought of asking industry what it really needed in the way of help from the technicians. No one, at least, had tried to get a really composite picture.

This was largely because industry has been putting too much emphasis on creating demand. It has not placed enough stress on asking the customer what it wants. And the customers, as these re-

plies show, have been waiting their turn to speak.

Exactly what is this Research Advisory Service? How much does it cost? What does a bank know about research?

Anyone, naturally, might ask these questions. Especially curious, probably are the companies with large technical staffs who keep their work pretty much to themselves. To some of them it would be a violation of traditions to take their problems to anyone outside of their own household.

By and large, the answer is that the Research Advisory Service is a phase of that changing relationship between banking and industry. A decade ago, it will be admitted, the bankers' approach to large industrial companies was mainly through the financial end of the business. There was so much to be done in the way of making loans, floating security issues, and so on, that the banker friend scarcely ever inquired into manufacturing operations.

A New Approach

Today much of the justification for the old-fashioned approach has been removed. Bank financing has not been so important a problem. New capital flotations have become a pretty cut and dried procedure with the SEC in the picture.

So banks, generally, have been feeling the need of a new procedure to side up to industry, to help it, befriend it.

Mr. White, before he became interested in research matters, was really an investment banker. He worked out a little theory, which proved to be good, that the stock of the companies really doing a good job of research would be the leaders in the future. He has actually seen that come to pass with a number of companies. Companies which neglected research, he said the other day, are noting that the market values of their securities are not all that is to be desired.

Mr. White took time off to acquaint himself with research progress. He traveled abroad to see what Europe was doing. It was a trip that brought him out of his shell as a banker. It was as though, all of a sudden, he had beheld a brilliant industrial world about him—a world which a good many unimaginative bankers had failed to see.

It then became clear to him that technology was not languishing with the depression. It was a field vibrant with activity while business was sluggish, fearful and afraid. Mr. White's idea was that some service could be performed correlating information. He thought the bank might be the agency to do the job. It was detached, first of all, and could view matters objectively. Then, also, it was more or less a confidential agency.

And gradually he found, to put it in his own words, that "a bank is an ideal connecting link between all accumulated non-confidential research information and the manufacturer who needs it."

Bert H. White

Mr. White, vice-president of the Liberty Nationl Bank and "father" of the idea of a Research Advisory Service.

Today this is a thriving agency, with 14 banks participating. It is a service used freely by industry. A company with an industrial problem, or a problem in research, seeks information and advice and is given it.

There is no set procedure in satisfying the wants of a company. A problem, for example, may require a symposium to gain the opinions and viewpoints of, say, university professors, professional consultants, laboratory men, practical operating men, and, in some instances, viewpoints of a competitor.

A large chemical company, with defense orders piling up, wanted to know the source of a certain chemical compound. The information is obtained and telegraphed.

A nationally-known machinery manufacturer had a pressing problem making defense material, involving a problem in hydraulics. It is a highly technical matter and searches of scientific treatises, the company said, yielded no information. In a short time an extremely elaborate report went to this company. The matter was brought to the attention of universities, consultants and others, and through painstaking investigation, all available data had been briefed for this company.

This is a service for which the Research Advisory Service makes no charge. In handling the bulk of the problems offered, the bank finds that the investigating costs are relatively small. Some reports cost the bank more money than it can ever expect to obtain in new business with that company. But the Service feels this is good bank advertising, reaching the type and kind of accounts which are profitable in the long run. The bank doesn't try to figure profit and loss on each report it gives. But it measures the value of the entire service from the standpoint of the prestige it builds for the bank.

Now the Research Advisory Service is about to become a formidable undertaking in view of the national defense program. It has put a new twist on industrial research problems, Mr. White said the other day.

"Research problems in defense, which have been sidetracked on laboratory shelves during peacetime, now are engaging the attention of thousands of industrial scientists. What is going on in the laboratories bespeaks the willingness of industry to co-operate with the government."

I asked Mr. White how the professional consultants regard him. I suggested that some of them might not like to see someone grazing in their fields.

But he hastened to explain that the Research Advisory Service does not attempt to encroach on their field. The practical effect of it all, he said, is to throw business their way. The Research Advisory Service does not hesitate to suggest such professional advice when obviously it is needed.

Mr. White said he is happy over the co-operation given him by the professional consulting laboratories. Some have enthusiastically endorsed the service, feeling that it may tend to purge the professional field of those who are incompetent to serve industry.

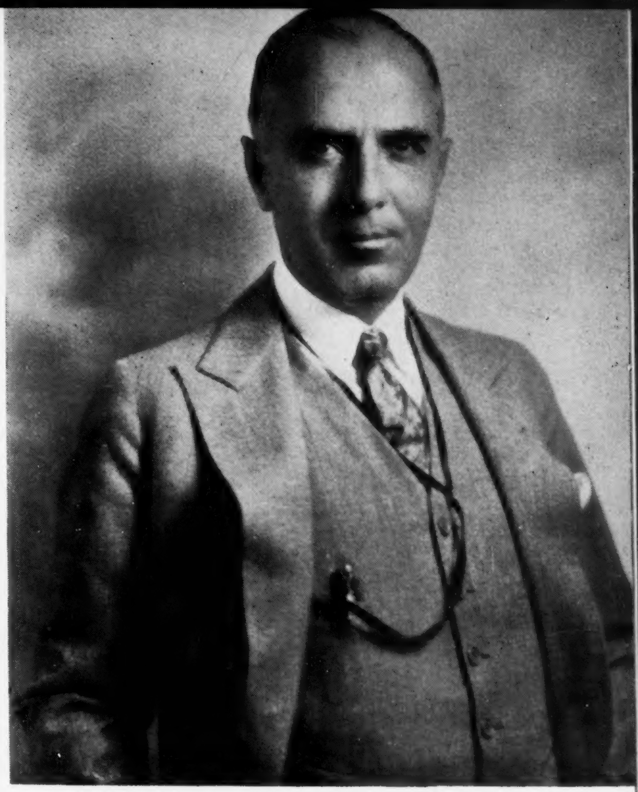
The Research Advisory Service by no means tries to give a layman's advice on highly specialized technical problems. It makes the claim that it has the co-operation of more than 800 industrial research laboratories. It does not undertake research work of its own, but refers problems to laboratories in industry, universities, technical schools and trade associations.

It serves industry much in the manner that a department of the government—say the Department of Commerce—serves business.

Special problems that come to the Research Advisory Service are handled by the science committee, which meets periodically. Chairman of the committee is Maurice Holland, who is director of the Division of Engineering and Industrial Research of the National Research Council. Others on the committee are, Dr. Henry A. Barton, director of the American Institute of Physics; Williams Haynes, chemical economist; Dr. Harrison E. Howe, editor of *Industrial and Engineering Chemistry*, and Dr. C. H. Mathewson, professor of metallurgy at Yale University.

"Headliners" In the News

Henry Bower (left) was elected president of Henry Bower Chemical Manufacturing Company, Philadelphia, as of November 1. He replaces William H. Bower (below) who retired after fifty-four years of continuous service with the company.



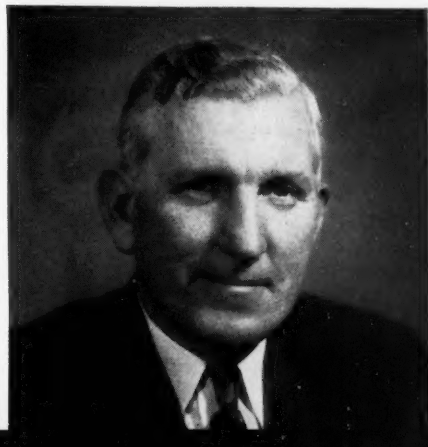
Harry L. Derby, president, American Cyanamid & Chemical Corp., was speaker at the annual banquet of the American Association of Textile Colorists and Chemists, which climaxed meeting at Hotel Commodore, N. Y. City.

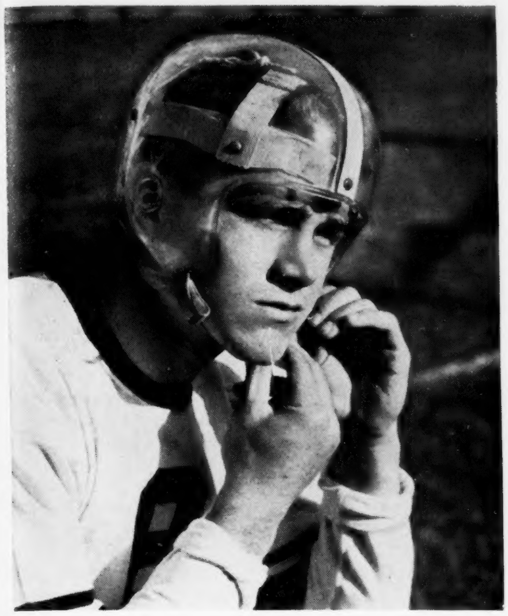
S. J. Horrell has been appointed vice-president of the Power Piping division of Blaw-Knox Company, Pittsburgh. He was formerly sales manager of the division.

James R. Simpson has been named manager of the new Durham, N. C., branch of Columbia Alkali.

Thornton C. Jesdale has been named manager of New England sales of Monsanto's organic chemicals and phosphate divisions.

Benjamin G. Symon has been made manager of Shell Oil Company's technical products department. He will direct sales east of Rockies on naphthas, solvents, other petroleum products.





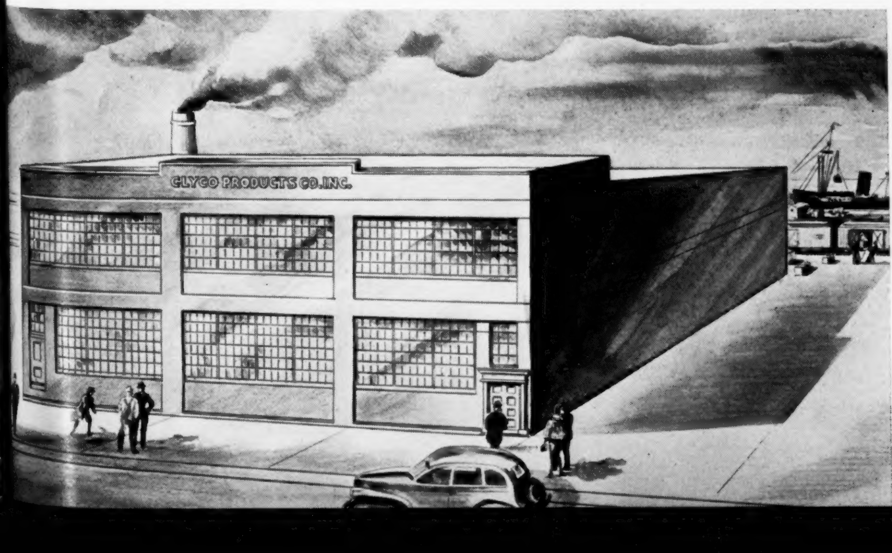
It had to come; plastics are now sported on the gridiron. A member of Northwestern football team adjusts helmet molded of Tenite, resilient plastic developed by Eastman Kodak.

"Wally" Merrill of Joseph Turner & Co., poses beside his new plane. A full-fledged aviator, he finds taking to the air a great time saver in calling on the trade.

Steamship "Warrior" is shown at Galveston pier while taking on largest cargo of crude sulfur ever shipped from United States, according to J. D. Collins, traffic manager of Jefferson Lake Sulphur Co. A. A. Mayer, president of the company, journeyed from New Orleans to attend record loading and declared it was forerunner of 50,000 tons which will move this year.

Three identical sheets of "Louverglas," placed at different angles. Above, with the flowers showing through clearly, it appears as transparent sheeting with tiny parallel hair lines in vertical position; below, it appears translucent; and at the center it appears midway between transparency and translucency. This material, made of "Plastacele" cellulose acetate plastic by Du Pont is intended primarily for fluorescent lighting fixtures.

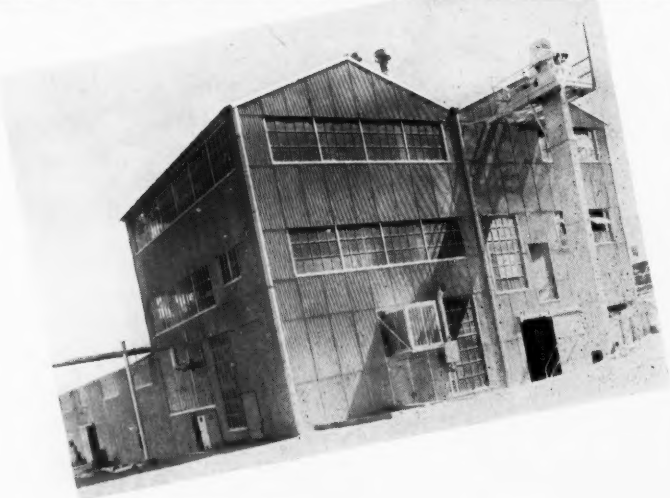
Glyco Products Co., Inc., has approved plans for new Brooklyn, N. Y., building. It will consist of three sections, the administrative, research laboratory, and manufacturing divisions. New manufacturing equipment of stainless steel is being specially designed. Research laboratory will include additional pilot plant and pilot auxiliary equipment. Architect's drawing is shown below.

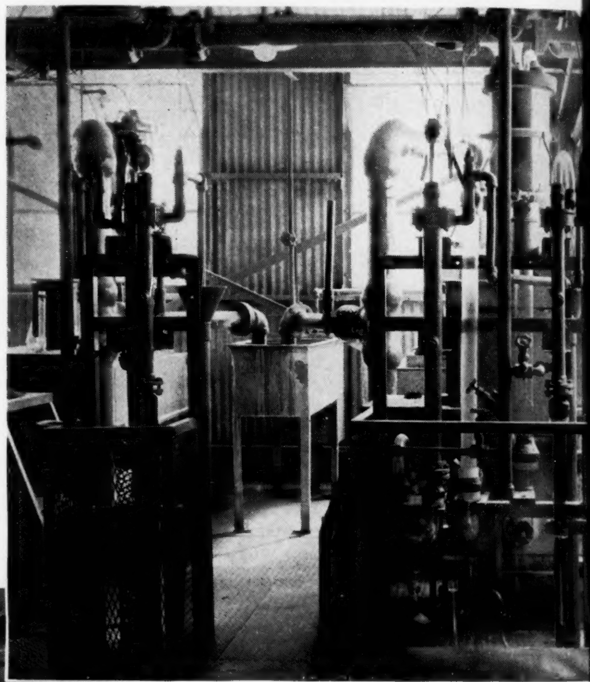


Trona Bromine Plant

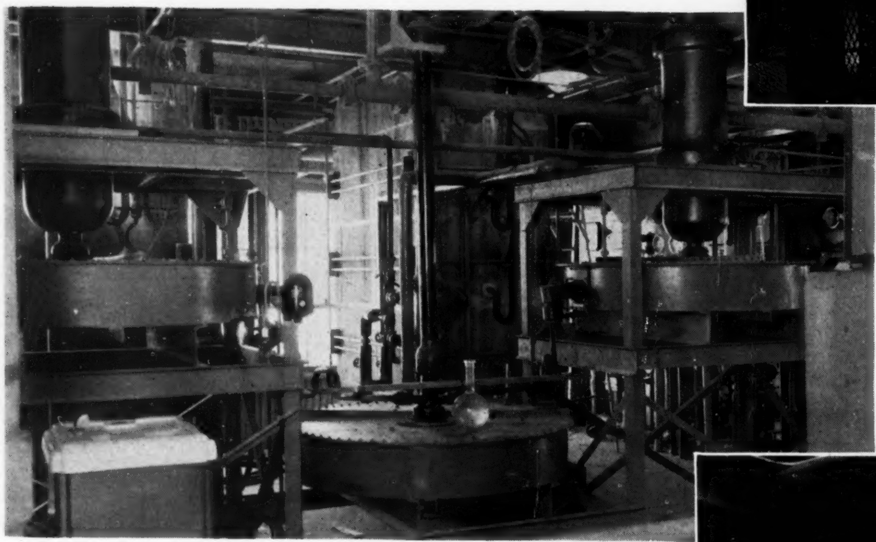
Since announcement in "Chemical Industries" in February, 1940, of the then current installation, American Potash & Chemical Corporation's bromine plant at Trona, Cal., has been placed in commercial operation, and carload shipments have begun. The plant, which will have a capacity in excess of 2,500,000 pounds bromine per annum, is housed in a separate modern, air-conditioned building, two views of which are shown at left, designed to provide for maximum safety for the workers and cleanlinesss of the products. The equipment, which has been installed, is of the latest design and includes such corrosion-proof materials as rock granite, chemical stoneware, pyrex glass, tantalum and stainless steel.

Double distillation is provided to assure that the bromine, being distributed under the Trona brand, shall exceed exacting specifications. Modern controlling and recording equipment guards the uniformity of the product. Trona brand sodium, potassium and ammonium bromides will be crystallized and recovered in specially constructed corrosion-proof equipment designed to prevent contamination.

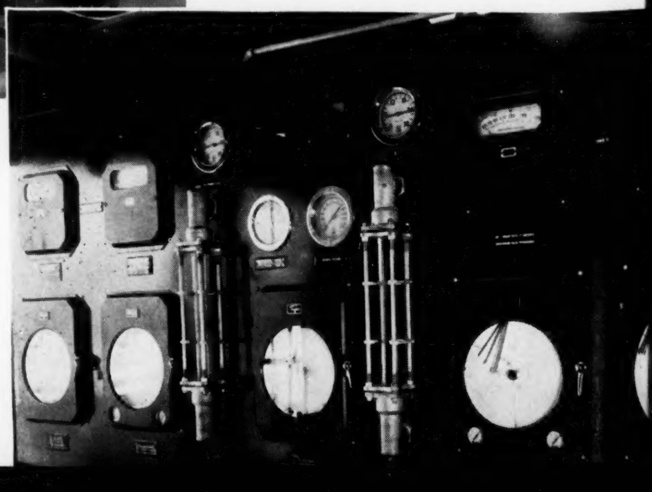




Part of the battery of bromine condensers at the Trona Plant.

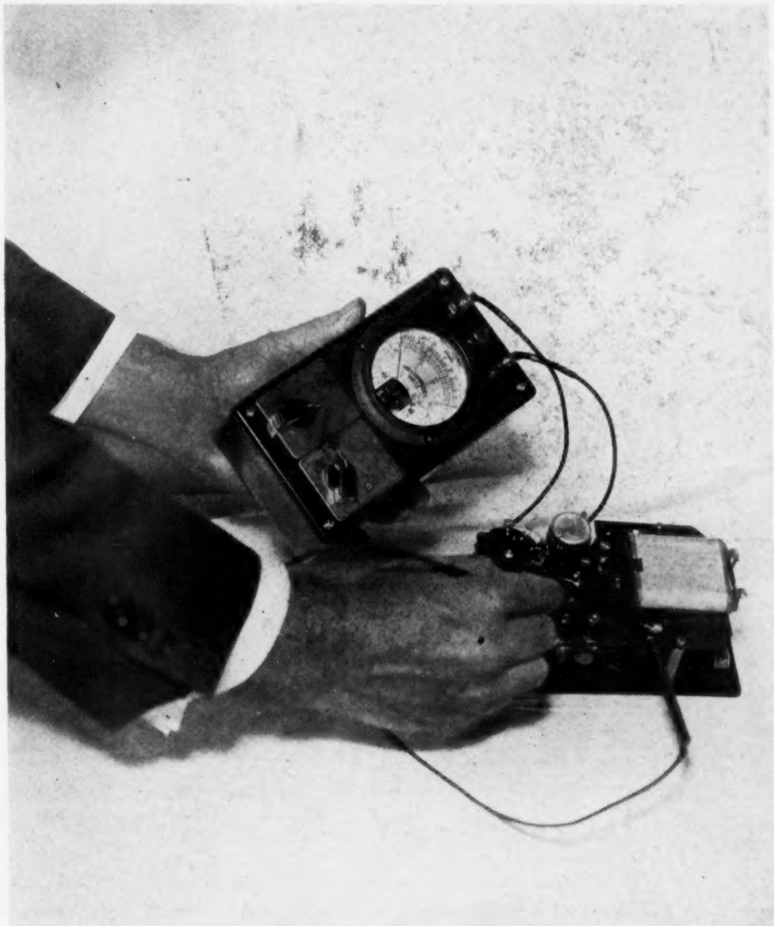


Bromine refining stills. Chlorine removal stills on each side; organic removal stills in center; bromine tower in background.



Bromine tower instrument board where careful check is kept on output of bromine.

PLANT OPERATION AND MANAGEMENT



Maintaining Electrical Recording Instruments

Electrical recorders, used in determining values and variations of quality in products at different times are complex mechanisms requiring a deal of care on the part of the operating force. This subject is taken up in the following article, prepared by Paul MacGahan of Westinghouse. Above is a portable test unit showing convenience of handling, referred to in article as Figure 5.

DIGEST OF NEW METHODS AND EQUIPMENT FOR CHEMICAL MAKERS

CARE AND MAINTENANCE

Of Electrical Recording Instruments

By Paul MacGahan, *Westinghouse Elec. & Mfg. Co.*

Electrical Recording Devices Play an Important Part in Many Chemical Plants and Laboratories. The Reference Value of This Article, Therefore, Is Self-Evident.

WHILE electrical recorders are essentially similar in their principle of operation and design to indicating instruments their purpose is not only to measure, but also to draw a curve recording the values and variations of the qualities at different times.

It follows from this that recorders are structurally more complex than indicators and their maintenance involves a greater number of factors. It is the purpose of this article to outline in a brief way the care and maintenance required in order to obtain satisfactory results.

The advantages of recorders (sometimes referred to as graphics) and their applications to all industries in general are so well known that there is no need to dwell upon them in an article devoted solely to their maintenance.

So far as the chemical industry is concerned, their use is being very largely extended throughout the new fields of chemical endeavor, inasmuch as in chemistry as well as in any other science, measurement is a prime necessity.

The application and maintenance of instruments in the chemical industry is similar to that in other industries with perhaps the exception that corrosive fumes are sometimes present which have to be guarded against, in the use and care of instruments.

Installation

The installation of electrical recording instruments necessitates special care, on account of the presence of a clock, and a pen or other marking mechanism.

The support on which it is mounted should be free from unusual vibration, and the instrument should be carefully leveled. The location should not be subject to extreme variations of temperature as this may affect the action of the pen and ink. Likewise extreme variations in humidity would vary the width of the paper chart sufficiently to cause an error.

One difficulty sometimes encountered in chemical plants, is the presence of corrosive gases in the atmosphere. These are liable to attack exposed metal parts, or in extreme cases, some of the interior parts such as springs, small clock gears and pivots. In such locations exposed metal parts and the various electrical connections should be protected with a coating of vaseline, boiled linseed oil or other non-corrosive thick oil. In extreme cases it may be found desirable to install the instruments inside of protective glass-front cabinets.

The usual safety-code rules as to grounding of cases or circuits should of course be followed, as well as the general instructions furnished by the manufacturer. Such instructions should be carefully read and understood before proceeding to install or use an instrument.

Construction

The recorders covered by this article are those designed for measuring electrical quantities, or for measurement of non-electrical quantities when these can be translated into amperes or volts. They may vary in specific features of design to suit the different conditions found in practice. Some have "strip type charts" such as Figure 1; others have the simpler but less legible circular chart such as Figure 2. Again some are "direct acting" in which the measuring element motivates the pen directly; others are the "relay type" in which the measuring element is made to control a separate motor element which in turn furnishes the power to drive the pen. Furthermore, recorders may be either of the switchboard type, or they may be portable.

All of the various types may be said to consist of the following basic elements:

(a) An electrical measuring element. This operates on the one of the same principles of operation that are used for indicating instruments.
(b) A marking system, such as pen, ink, and paper chart.
(c) A clock with paper driving mechanism. Relay types, in addition, have a controlled mechanism.

The Electrical Measuring Element

To be accurate, an instrument must operate without appreciable friction.

The contact of a pen point along the surface of the paper introduces friction far in excess of the normal friction of a pivot and jewel bearing. Not only is this friction very much greater, but it acts at the large radius from the pivot to the pen point, and thus forces which are sufficient for indicating instruments are utterly inadequate to overcome this and draw an accurate line on the paper.

Herein lies the difference in the problem, and the basic difference between indicating and recording instruments The means adopted for overcoming this pen friction led to the two principal general kinds of recording instruments namely:

(A) Direct Acting types.
(B) Relay types.

In the direct acting types the measuring elements are made as large and powerful as possible, and use a comparatively high input level of power, so as to overcome the pen friction "by brute force." They are generally much heavier than the indicating types. In the relay types, the measuring elements are as usual for sensitive indicating instruments or even like galvanometers, and they act to control separate motors which operate the pen. These relay types may be either electrical, as in the Westinghouse Relay Type recorders, or mechanical as in the Leeds and Northup temperature or "micro-max" recorders.

As most of the "industrial" recorders for measuring electrical quantities are of the direct acting type, this article will be confined to this type, insofar as the "measuring element" is concerned.

In a typical strip type recorder such as Figure 2, the meter element is made

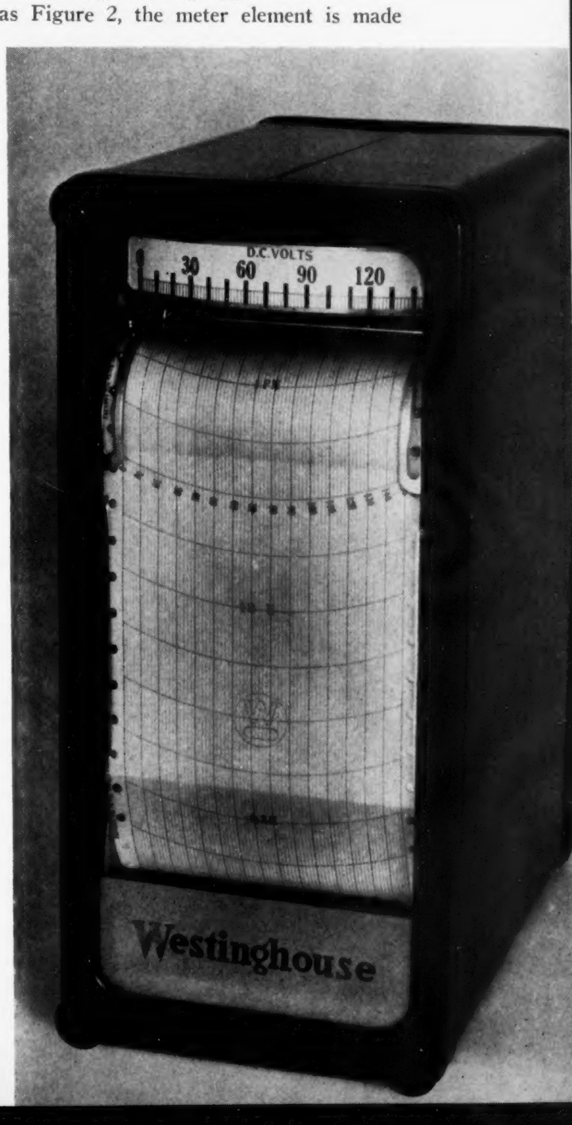


Fig. 1.
A switchboard recording d-c voltmeter.

accessible, as shown in Figure 3. Figure 5 shows a typical meter element assembly, consisting of sets of stationary coils, and moveable coils. The movement is supported on a jewel bearing, the bottom of the shaft being a hardened steel pivot.

This bearing differs from those in indicating instruments in that the radius of the jewel and of the pivot are made quite large on account of the heavy weight movement. The jewel is supported on a spring. A vertical shaft arrangement lends itself quite readily to such a bearing.

A most important feature in the maintenance of these recorders is the action of this jewel bearing. When an instrument shows friction or sluggishness, the first thing is to remove the pen from the pen carrier. If the friction is still present the fault is either in the jewel bearing or is due to dirt, or particles either in the air gaps of the magnets or around the coils. After inspecting the movement for such stray matter, the lower jewel screw should be taken out (see Figure 5) and carefully inspected with eye-piece or microscope. Cracks or rough places can be detected by means of the point of a sewing needle. Any red powder present is an indication of a wornout pivot. This red dust is iron worn off the pivot and exidized. The pivot itself is removeably attached to the shaft and may be pulled out by means of small tweezers. An inspection of the pivot under the magnifying glass may show flatness or irregularity. Such pivots may be re-ground and repolished in a small lathe, but the better idea is to obtain new pivots and at the same time new jewels from the manufacturer.

After the moving element has been found to be free from friction, the recording mechanism should be restored to its normal position, and the paper chart inserted (Figure 3.). The pen should then be replaced, and the ink flow through the capillary tube started.

A zero adjustment is provided by means of which the pen can be adjusted to the zero on the chart, with the power off.

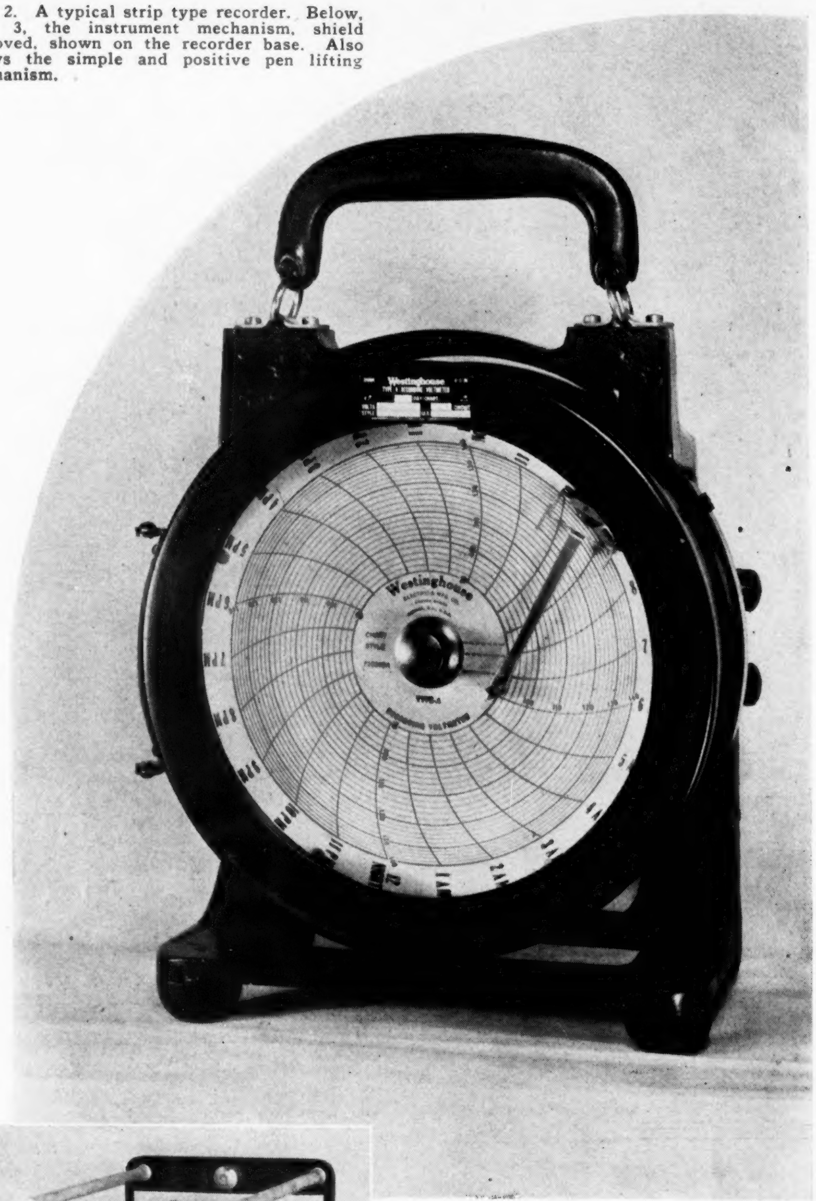
See that the moving element returns to zero freely when deflected slightly forward and backward by hand. The ink should be flowing as it has a tendency to reduce the friction at the pen point.

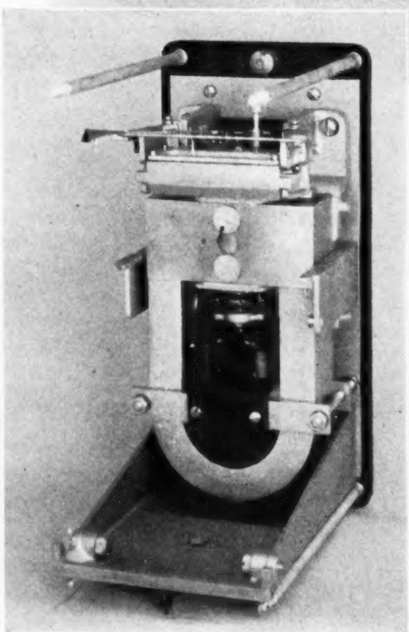
Aside from friction the maintenance of the meter element may necessitate checking the various coils, resistors, and connections for open circuits or short circuits. For this purpose a miniature portable ohmmeter is very useful.

The necessity for checking the coil circuits is indicated only in case the instrument shows an electrical error, that is, one not due to mechanical causes such as friction or zero adjustment Such electrical errors can be determined by checking the calibration. This is done by comparison to portable "standards" in exactly the same way as for corresponding indicating instruments.

The meter elements in the circular chart recorders, Figure 1, are simpler in construction than those in the more elaborate and higher accuracy strip chart instruments. In general, however, the above methods of maintenance will apply.

Fig. 2. A typical strip type recorder. Below, Fig. 3, the instrument mechanism, shield removed, shown on the recorder base. Also shows the simple and positive pen lifting mechanism.





Pens and Ink

In the marking system of recorders, the ink recommended varies according to the type of pen used. Thus it is desirable to use only the ink recommended by the maker.

Pens in general are of two types, the simpler of which is the open "V" type.

The ordinary open V type pen holds enough ink to supply a complete turn of the chart under usual circuit conditions. See that the pen is filled whenever a chart is replaced The pen may be cleaned by passing a thin piece of writing paper several times through the slot. If the instrument has been out of service for a time, it may be necessary to clean out some dried deposit or dirt by soaking the pen in alcohol. Points which have be-

come dull can best be sharpened by using a fine razor hone.

A rough point in any recording pen will not only cause friction but will scratch the paper causing the ink to spread or to feed too fast.

For more exacting conditions some form of capillary tube pen is preferred, especially when long strip type records necessitate a larger supply of ink.

The pen is a capillary silver tube with a special platinumiridium tubular point. A rubber bulb pen-starter can be used either to fill or clean the pen, while the tiny cleaning wire furnished is the best way to clear the small hole in the tubular pen point. After cleaning and refilling the pen, it should be checked for balance. If the marking edge becomes rough, it should be carefully rehoned to a smooth surface with a slightly rounded edge to avoid scratching the record chart.

When shipping or transporting an instrument to a new location the ink should be always removed from the ink-container or reservoir.

If the recorder has been out of service for some time, the ink reservoir should be thoroughly washed with water or alcohol, and refilled with fresh ink. If the recorder is to be taken out of service for any appreciable time, the pen and inkwell should first be thoroughly flushed out and cleaned with alcohol or water.

Clocks

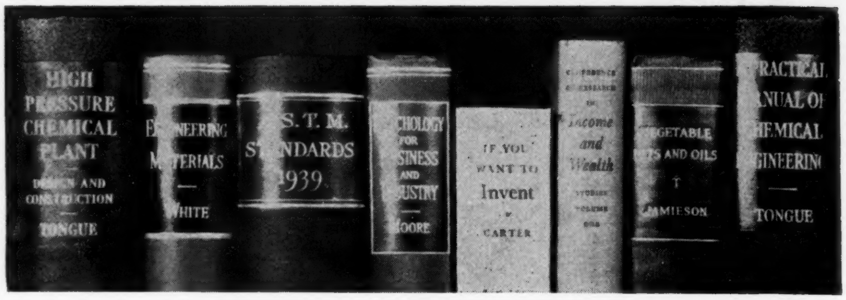
Spring Wound Clock—In common with ordinary high grade clocks these recorder clocks must be occasionally cleaned and oiled.

It is recommended that any necessary cleaning and oiling be done by a first-class local jeweler or instrument maker. The clock mechanism is easily removed for cleaning or repair by taking out some mounting screws.

The entire clock may be cleaned by immersion in a bath of naphtha or clock cleaning fluid. After being thoroughly dried, the bearings should be lubricated with a high grade clock oil. There is so much poor quality, acid forming oil on the market, that it is well to play safe and use only such oil as recommended by the manufacturer of the instrument. The main spring should be lubricated by injecting some petrolatum (vaseline) between the convolutions when the spring is not wound up.

The timing regulation of hand wound clocks is accomplished in exactly the same way as for ordinary balance wheel clocks or watches.

Synchronous Clocks — Synchronous clocks are self-starting and do not require any regulation. They are only applicable with accuracy to circuits having frequency regulation, to the frequency for which the clock is designed. The clock train of gears should be occasionally cleaned and lubricated as above indicated for spring-driven clocks.



The Industry's Bookshelf

Electronic Processes in Ionic Crystals, by N. F. Mott and R. W. Gurney, Oxord University Press, 275 pages, $5.50. The authors have written this book in order to develop the theory of the movement of electrons in ionic crystals, and attempt to apply the methods which have been successful in the field of processes involving the motion of electrons in non-metals. They discuss the absorption of light by ionic crystals such as halides, sulfides, and oxides and the resulting photo-conductivity and luminescence; also the properties of semi-conductors, and the insulating properties of non-conducting materials and their breakdown in high fields. It is their aim to develop the theoretical ideas appropriate to this class of phenomena, and to interpret in terms of theory as many experimental facts as possible.

The Nature of the Chemical Bond, by Linus Pauling, Cornell University Press, Ithaca, New York, 450 pages, $4.50. Here the author discusses the problems of chemical binding and the structure of molecules and crystalline aggregates of atoms and molecules from the modern viewpoint. Although no knowledge of the quantum theory is assumed on the part of the reader, the theory of the treatment is based chiefly on the results of the quantum mechanics with special reference to resonance phenomenon, including the concept of resonance of molecules among alternative electronic structures.

The Chemical Composition of Foods, by R. A. McCance and E. M. Widdowson, Chemical Publishing Co., New York, 150 pages, $2.50. As the name implies, the authors here have compiled a number of tables giving compositions of 541 foods, literally from soup to nuts.

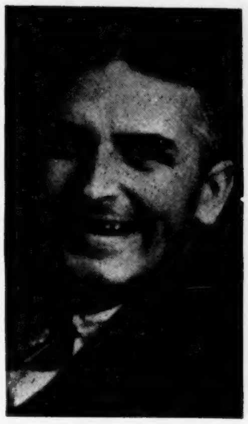
Textile Testing by John H. Skinkle; Chemical Publishing Co., Inc., New York, 267 pages, $3.00. This work gives many physical, chemical and microscopical methods and procedures for the testing of textiles at various stages in the production of goods. The text matter is supplemented with a number of tables, illustrations, graphs, sketches, etc. A useful feature is the bibliography of references given at the end of each test, where further information may be obtained.

High Polymers, Collected Papers of Wallace H. Carothers on Polymerization, Edited by H. Mack and G. Stafford Whithy, Interscience Publishers, Inc., New York, 459 pages, $8.50. Wallace Hume Carothers was a very active investigator in that branch of organic chemistry which is becoming increasingly concerned with molecular structures of greater and greater complexity and greater and greater size, namely high polymeric chemistry. In the words of the editors of this work they felt it a privilege to prepare this edition, not only because the issue of Carother's papers in a convenient collected form will be an addition to chemical literature but also because it will serve as an expression of the admiration and esteem which they and other workers in the field of high polymers feel for a great chemist.

Calculations of Qualitative Analysis, by Louis J. Curtman and Sylvan M. Edmonds, The Macmillan Co., New York, 156 pages, $2.00. This is a modern treatment of calculations encountered in theory and practice of qualitative analysis. Principles are outlined and applications explained and demonstrated. This book may be effectively used in schools where the instructor prefers his own laboratory notes or uses a text that gives small attention to principles and problems.

Shipping and Container
FORUM

By 

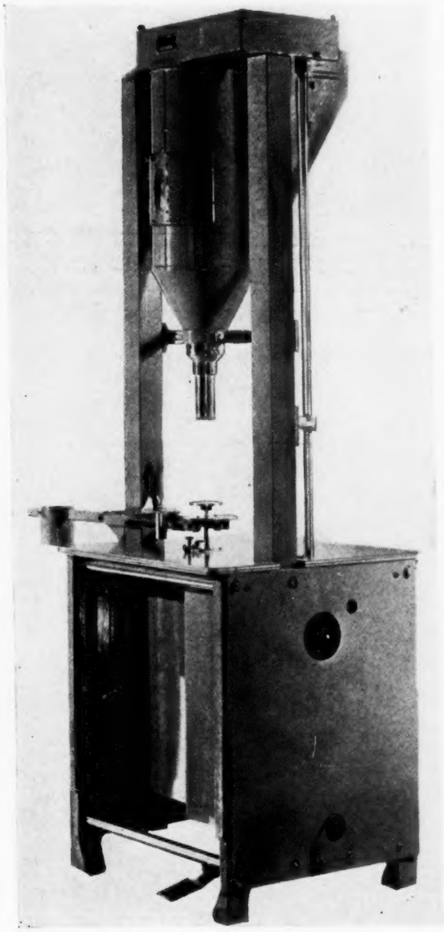


UNIVERSAL FILLING MACHINE A VERSATILE PACKAGER

The single unit Universal Filling Machine is one which the manufacturer claims will fill practically any type of container, including cans, envelopes, boxes, jars, etc. in quantities from a fraction of an ounce up to five pounds. (An accompanying illustration shows some of the kinds of packages which this filler can handle.) It packs powders, granular products and the heavier pastes and creams (not liquids) with equal facility. The machine measures by gross weight, by volume, measuring material by the turns of the auger, or by packing to a constant level in the containers and with one operator, has a capacity of about 15 to 25 packages per minute depending upon the amount to be filled.

This equipment minimizes and often eliminates, dusting during the filling process which is of special importance in the packaging of poisons.

These machines have served a useful purpose even in plants which are equipped with automatic high speed package machinery where they are used for filling odd sizes of packages and for filling new products whose merchandising possibilities are in the experimental stage.



Above—Universal Filling Machine made by Stokes & Smith.

Water Shipment Of Dangerous Articles

Both the House of Representatives and the Senate have passed H. R. 7357 which bill has been sponsored by the Department of Commerce to legalize certain proposed rules and regulations for water transportation of dangerous articles which have been prepared by the Department.

This Act broadens the field of dangerous articles to include a new classification termed "Combustible Liquids" when transported on passenger vessels (a vessel authorized to carry more than 12 passengers). These liquids include all liquids flashing between 80°F. (the upper limit of the present I. C. C. Regulations) and 150°F.

This bill places the responsibility for regulations and enforcement in the hands of the Secretary of Commerce but specifically states that he shall accept and adopt such definitions, classifications, specifications of containers, marking, labelling etc. which are or may be established by the Interstate Commerce Commission insofar as they apply to shippers by common carriers engaged in interstate or foreign commerce by water.

It is expected that the Department of Commerce will issue the final draft of their proposed regulations in the near future with a 30 day notice of a public hearing.

Strength Characteristics Of Corrugated Boxes

D. M. Hawley, Director of Research, Stein Hall Manufacturing Company, presented a paper on the Evaluation of Strength Characteristics of Corrugated Boxes before the annual meeting of the Technical Association of the Pulp and Paper Industry early this year The data presented in Mr. Hawley's paper are well worth the consideration of users of corrugated fiber boxes.

Mr. Hawley pointed out that the function of a shipping container is to protect its contents under shipping and storage conditions. A satisfactory corrugated fiber shipping container must resist with minimum deflection, compression loads which

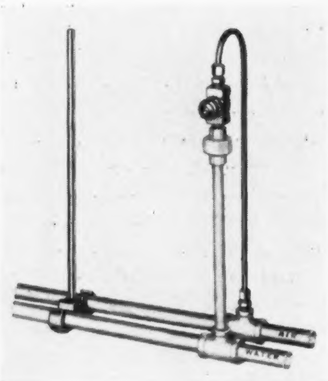
(*Continued on Page 573, Col. 1*)

Right—Some of the many varied types of packages filled by the Universal machine.

NEW EQUIPMENT

Humidifying Nozzle QC 92

The illustration shows a humidifying nozzle just placed on the market. A group of these nozzles are mounted in ceiling where water is maintained slightly below nozzle level by means of a float controlled

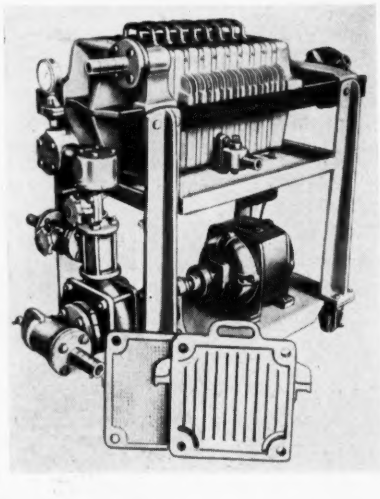


tank. Compressed air is controlled by a solenoid operated valve actuated by a humidistat. The system is fool-proof and cannot drip—if for any reason air supply is shut off, water will drop back to controlled level.

Quick Cleaning Filter QC 93

A new filter press has been developed for the purpose of reducing the amount of time and labor required to remove the filter cake after filtration has ceased. Manual cleaning of the filter press is ordinarily resorted to and as this work takes up a large share of the filtration cycle, considerable saving in time can be effected by this new method of cleaning out the filter press.

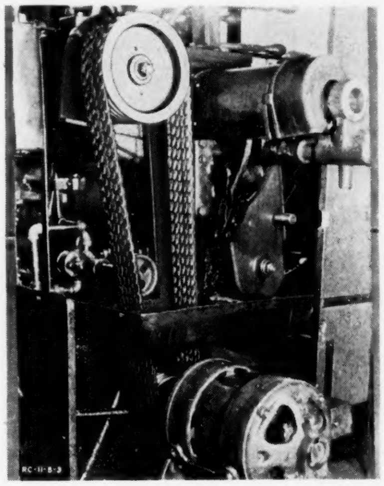
In general this quick cleaning or sluicing filter is not unlike the usual type of plate and frame pressure filter. However, special frames have been designed with ribs which support the filter cloth so that pressure can be applied behind them. The operation of the sluicing filter for filtration is in the usual manner When the filter chambers are full of solids, filtration is stopped and the remaining liquid drained off. Water from 30-50 lbs. pressure is then introduced and the drain cocks in the frames opened. This causes a sudden flow of water backwards through the filter cloth which loosens the cake and washes it out as a thin slurry through the drain cocks. Short surges of sluicing water filling each chamber and then released by opening each cock in turn effect a quick removal of the cake. When sluicing is completed, the next filtration cycle may be started at once. Thus a long series of runs can be made without opening the filter for cleaning. The time required for sluicing the filter is much shorter than that required to open and manually clean a filter of the same size. Since sluicing involves only the manipulation of a few valves, one man can clean the largest filter with ease. It is said that the filtrate yield using this method is as much as 30 per cent. greater than



that from filtration involving manual cleaning. The total time required for a series of sluicings is materially less than for opening and manually cleaning a filter press. As the filter cake is in the form of a slurry when removed from the filter press, it can be readily disposed of without manual labor. The unit illustrated here is a 12-inch Closed Delivery Type Filter Press having eight chambers and equipped with a large outlet cock for sluicing purposes. On larger filtering units individual outlet cocks are installed on each frame. These can be manipulated to concentrate the sluicing water in any one chamber so as to assure more complete discharge of the slurry.

Neoprene Belts QC 94

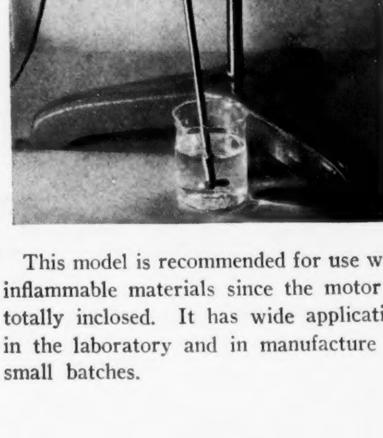
Some belting problems have recently been satisfactorily solved by the use of certain properties of neoprene. The accompanying illustration, shows one application where neoprene V-belts have been put to use to resist deterioration.



The requirements of this automatic screw machine necessitated the placing of the drive in a location where the belt is constantly exposed to cutting oils. It was found that a flat leather belt did not provide drive conditions necessary for the job. A rubber-bound fabric supplied the necessary drive conditions but the oil shortened its life. A neoprene-bound fabric was then tried and has since been giving reliable service and longer life.

Laboratory Mixer QC 95

The chief feature of this new mixer is its adjustable speed friction drive. The makers stress the point that there are no gears to wear out and no rheostat to buy.



This model is recommended for use with inflammable materials since the motor is totally inclosed. It has wide application in the laboratory and in manufacture of small batches.

Chemical Industries
522 Fifth Ave., N. Y. City.

I would like to receive more detailed information on the following equipment: (Kindly check those desired.)

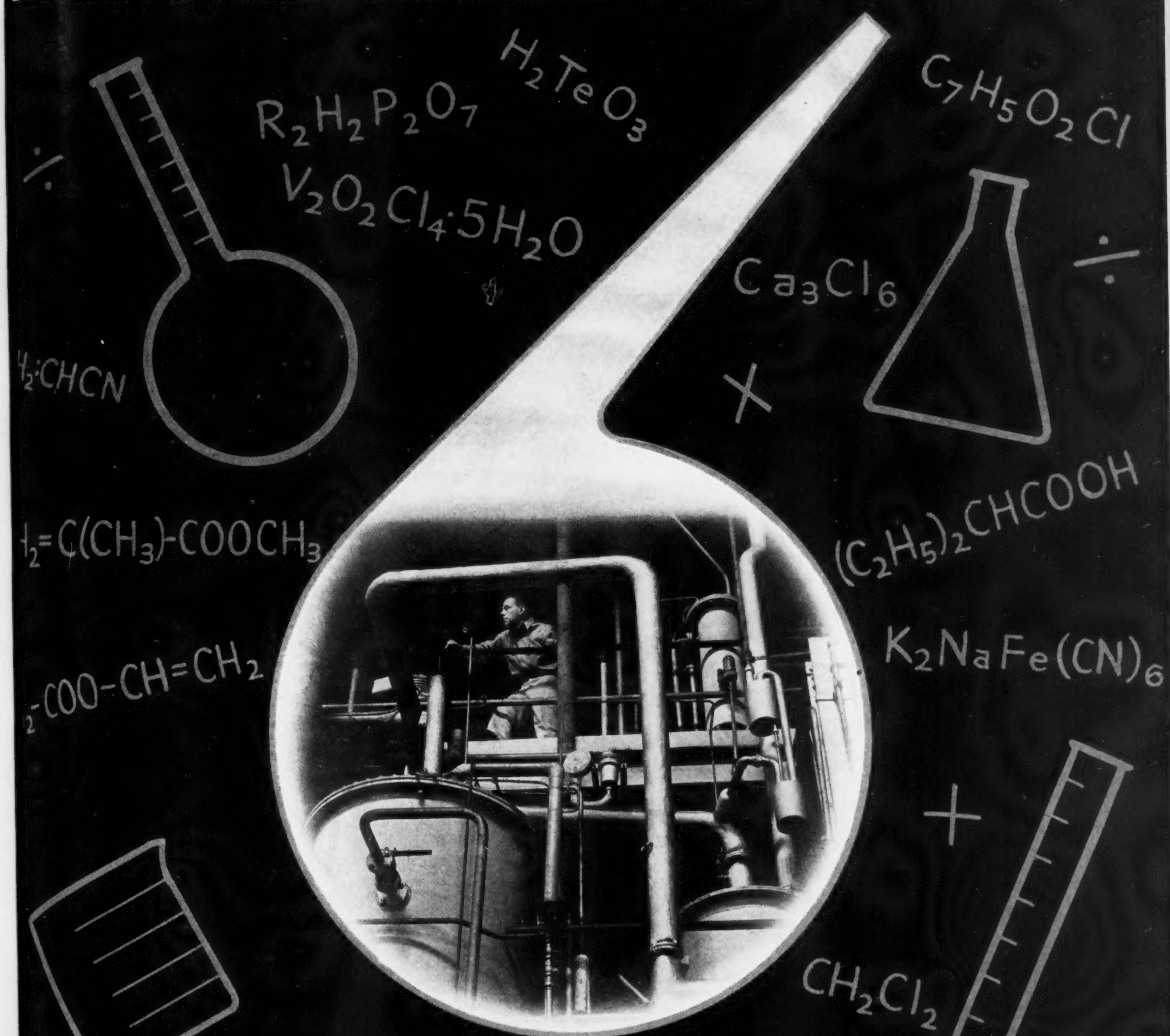
QC 92	QC 94
" 93	" 95

Name ....

Title .... **Company** ....

Address ....

NATIONAL CHEMICAL EXPOSITION



CHEMICAL INDUSTRIES

presents

New Chemicals for Industry

A Catalogue of New Chemical Products introduced during 1938-40 by the Advertisers in Chemical Industries and displayed at the National Chemical Exposition sponsored by the Chicago Section of the American Chemical Society at the Hotel Stevens, Chicago, December 11-15, 1940.

New Chemicals for Industry

A catalogue of New Chemical Products introduced during 1938-40 by the advertisers of Chemical Industries and displayed at the National Chemical Exposition sponsored by the Chicago Section of the American Chemical Society at the Hotel Stevens, Chicago, December 11 to 15, 1940.

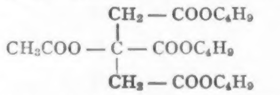
ACETONITRILE

CH_3-CN. Boiling range 79.8°-81.6° C.; Sp. Gr., 0.7842 at 20° C.; acidity as acetic acid, 0.2% maximum. Color 2 (A.P.H.A.). Forms constant boiling mixture with water, B. P. 75-76° C., 84% water, 16% acetonitrile. Uses—Synthesis of organic chemicals, particularly pharmaceutical products. Niacet Chemicals Corp.

ACETONYL ACETONE

$CH_3COCH_2CH_2COCH_3$. Colorless, water-soluble liquid, B.P. 191.4° C. Good solvent for cellulose acetate; xylene nitrocellulose dilution ratio, 1.8. Even when present to the extent of a small percentage it reduces viscosity of nitrocellulose and "Vinylite" resin solutions—important factor in roll-coating inks. A 1,4-diketone, it condenses with reagents to form ring compounds which are derivatives of furane, thiophene, and pyrrole, providing a simple method for passing from open-chain to cyclic compounds. Found to have a definite tanning effect on hides and skins. Carbide and Carbon Chemicals Corp.

ACETYL TRIBUTYL CITRATE

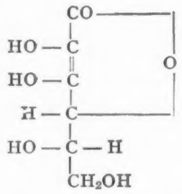


A colorless, odorless plasticizer of very low volatility and of high water resistance. It has been found compatible with a wide variety of plastic materials such as the cellulose ethers and esters, polyvinyl and polyvinyl acetal resins, phenolics, alkyds, etc. Can be used in products for injection or compression molding and should also be a valuable plasticizer in coatings and films. Chas. Pfizer & Co., Inc.

ACID ADIPIC

HOOC $(CH_2)_4$COOH. Commercial synthesis of adipic acid (M.P. 151.5° C.), assures a low cost, large scale, domestic source of this important dibasic acid. Purity—at least 99.6%. Valuable as an alkyd resin ingredient. Esters have proved to be excellent plasticizers for a wide variety of plastics and coating compositions. E. I. du Pont de Nemours & Co., Inc.

ACID ASCORBIC



Ascorbic acid is vitamin C, one gram being equivalent to 20,000 U. S. P. or International Units. The dry crystalline material is stable in air. In aqueous solution it undergoes oxidation, especially in the presence of alkalies and of iron or copper salts. It is decomposed by strong mineral acids. Ascorbic acid has a pleasant sour taste. Chemically, it reacts as a monobasic acid with antioxidant properties. Certain therapeutic substances are said to gain enhanced activity by combination with ascorbic acid. Chas. Pfizer & Co., Inc.

ACID n-CAPROIC

$CH_3CH_2CH_2CH_2CH_2COOH$. Liquid of characteristic odor, B.P. 203.1° C. Slightly sol. in water. Esters are important in manufacture of flavors, perfumes, and essential oils. Potential source of hexyl groups for the synthesis of varnish driers, resins, rubber chemicals, and certain medicinals. Carbide and Carbon Chemicals Corp.

ACID CYANOACETIC

CH_2CN.COOH. M.P. greater than 63° C. Insoluble in CCl_4 and benzene. Soluble in acetone, alcohol, ether, water. Use—Intermediate in the manufacture of a number of pharmaceutical and general organic materials. Dow Chemical Co.

9.10 ACID DIHYDROXY STEARIC

$CH_3.(CH_2)_7.CH(OH).CH(OH)(CH_2)_7.COOH$. M. W., 316. M. P., 95° C. Solubility, soluble in ether and hot water. Moderately soluble in ethyl alcohol. Suggested use—Synthesis. Available 50-lb. cartons, barrels. National Oil Products Co.

ACID 2-ETHYLBUTYRIC

$(C_2H_5)_2CHCOOH$. Also known as diethyl acetic acid. Water-white, high-boiling (194.0° C.) liquid which resembles butyric acid in most properties except that its odor is less pronounced and water solubility limited. Forms esters less water-soluble than corresponding butyrates and hence are more suitable as plasticizers. Readily halogenated to form intermediates in making certain interesting drugs, dyestuffs, and special chemicals. Carbide and Carbon Chemicals Corp.

ACID 2-ETHYLHEXOIC

$CH_3(CH_2)_3CH(C_2H_5)COOH$. Mild-odored octanoic acid. Has a comparatively high B.P. 226.9° C. Properties of its metallic salts indicate possibilities as varnish driers because they are stable, hydrocarbon-soluble, high in metallic content, and light in color. Products of high moleclular weight, such as its esters, form the basis of other compounds having detergents, emulsifying, or plasticizing properties worth investigating. Carbide and Carbon Chemicals Corp.

CHEMICAL INDUSTRIES

522 Fifth Avenue, New York, N. Y.

I would like to receive, without obligation, more information on the following *New Chemicals for Industry*:

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To receive the above information the following must be filled in completely:

Name .... **Position** ....

Company ....

Full Address ....

ACID FUMARIC

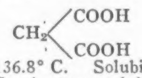
CH—COOH
‖
HOOC—CH

Fumaric acid is prepared by fermentation of carbohydrates. An older process involves the catalytic oxidation of benzene. Pure material is a free-flowing white powder, only slightly soluble in cold water. This unsaturated dibasic acid is rather stable toward heat. Its esters can be polymerized to form liquid or solid products. The fumarate esters of polyalcohols are especially suitable for copolymerizing with other plastic-forming materials, producing clear stable resins of very desirable physical and chemical properties. Chas. Pfizer & Co., Inc.

ACID HYDROXYACETIC

$HOCH_2COOH$. Hydroxyacetic acid, M.P. 80° C. A synthetic organic acid derived from coal, air and water by high pressure synthesis. Intermediate in strength between acetic and formic acids. Non-toxic, non-volatile, readily soluble in water. Of interest in foodstuffs, resins, dyeing, tanning, photography and organic synthesis. Bifunctional, it exhibits the properties of both acids and alcohols. Its esters are solvents for a variety of natural and synthetic resins. E. I. du Pont de Nemours & Co., Inc.

ACID MALONIC



M.P. 131.2-136.8° C. Solubility, g./100 g. solvent at 25° C.; Acetone, soluble; Alcohol, 42; Benzene, insoluble; CCl_4, insoluble; Ether, 8; Water, very soluble. Use—An intermediate in the perfume, plastic, and pharmaceutical fields. Dow Chemical Co.

ACID ORTHOCHLOROBENZOIC

$C_7H_5O_2Cl$. White crystalline solid. M. P., about 138° C. Uses—dye intermediate; for chemical synthesis. Cont.—100 lb. slack bbls. Heyden Chem. Corp.

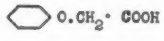
ACID PARACHLOROBENZOIC

$C_7H_5O_2Cl$. White, semi-crystalline solid. M. P. 284° C. Uses—preservative, germicide, fungicide; dye intermediate, in chemical synthesis. Cont.—100 lb. slack bbls. Heyden Chem. Corp.

ACID PHENOL SULFONIC (65% Solution)

Sp. Gr., 25/25° C., 1.34. Contains not more than 5% free phenol. 2.5% free H_2SO_4. Use—Refining of tin, organic synthesis. Dow Chemical Co.

ACID PHENOXY ACETIC



M. P. 99.9-101.5° C. Solubility, g./g. solvent at 25° C. Alcohol, very soluble; Benzene, 3; CCl_4, insoluble; Ether, 29; Water, very soluble. Use—Fungicide. Dow Chemical Co.

ACID PHOSPHORIC, FEED GRADE

Conc, 68%. Special grade for treating grass and legume ensilage, preserving the proteins and vitamins of the green fodders. Makes possible the simple, economical preservation of green fodders, improving milk color and flavor during the winter. Virginia-Carolina Chemical Corp.

ACID PHOSPHORIC, INHIBITED (Tech.)

Conc., 75%. Contains an inhibitor reducing the corrosive rate on ferrous alloys in excess of 98%, making possible its use for a variety of new uses. Inhibited acid, as treated, is non-toxic, and otherwise not affected by the presence of the small amount of inhibitor. Virginia-Carolina Chemical Corp.

ACIDS PHOSPHINIC

$RPHO_2H$. Kerosene phosphinic acid contains a phosphorus-to-carbon linkage and is derived from the hydrocarbons contained in kerosene. It is a brittle, glassy solid of low melting point, soluble in most common organic oxygenated solvents. Benzene phosphinic aoid has a characteristic phosphine-like odor. They have possible application as insecticides and fungicides as well as other applications characteristic of organic phosphorus compounds. Victor Chem. Works.

ACID SULFAMIC

M. P. 205° C. (dec.). Soluble to extent of 21.3 g. per 100 gs. water at 20° C. Strong monobasic acid with unique chemical and physical characteristics. Non-hygroscopic, non-volatile; all salts readily sol. water. Uses—nitrite removable following diazotization reactions; leather tanning; standard in acidimetry; electro-refining of metals; weed killer; organic syntheses. Derivatives—Ammonium sulfamate, a white, crystalline solid, M. P. 131° C; extremely sol. water. E. I. du Pont de Nemours & Co. (Inc.).

ACID SULPHONATED LAURIC

The sodium salt of sulphonated Lauric Acid finds use as a replacement for Sodium Lauryl Sulphonated—as a material in cosmetics, toothpastes, hair preparations, etc. Suggested wherever a water soluble Lauric Acid is desired or where emollient sudding is desired. Also available in the Potassium or Triethanolamine Salts. The Beacon Co.

ACID SULPHONATED NAPHTHENIC

The Sodium Salt of Sulphonated Naphthenic Acid. Finds use in water miscible fungicides, wood preservers, and plant sprays. The Beacon Co.

ACRAWAX

A light-colored synthetic wax with excellent lustre. M. P., 95-97° C. It is insoluble in water, soluble hot in toluol, turpentine, alcohol, butyl alcohol, etc. Solution of Acrawax in toluol gives a clear, transparent gel on cooling. Acrawax has excellent lustre, is free from impurities, adulterants, and is not a blended wax. Replaces carnauba wax in many cases for shoe polish, furniture polish, floor polish, cosmetics, record waxes, dental waxes and special wax combinations. Acrawax emulsifies readily, giving smooth stable paste or fluid emulsions. Glyco Products Co., Inc.

ACRAWAX B

A tan-colored wax. M. P., 86-88° C. Has excellent lustre and is very similar, in most properties, to Acrawax. It is of special interest, however, in the fact that solutions in mineral oil, mineral spirits and turpentine give clear, transparent gels on cooling. Glyco Products Co., Inc.

ACRAWAX C

A hard, brown wax with high lustre. M. P., 133-134° C. It is insoluble in water, soluble hot in toluol, mineral spirits and turpentine. Solutions in turpentine form stable gels on cooling. It is compatible with paraffin wax, carnauba wax, rosin, etc. It is of particular interest where a high melting wax which is not brittle is desired. It is also finding application in raising the melting point of other waxes. Acrawax C is suggested for polishes, electrical insulation, waterproofing, record waxes, dental waxes, molding waxes and special wax combinations and lubricants. Glyco Products Co., Inc.

ACRYONITRILE

CH_2:CH.CN. Colorless liquid, with not unpleasant odor. Toxic. Mol. Wt., 53.03. B. P., 76.5°-78.5° C. Sp. Gr., 0.8060 at 20° C. Solubility, 7.3% in water (by weight) at 20° C. Soluble in all proportions in most organic solvents. Derivation—From Calcium Cyanamide. Uses—For synthetic rubbers and chemical synthesis. Containers—Steel drums. American Cyanamid & Chemical Corp.

ACRYLONITRILE

CH_2=CHCN. Boiling range (5-95%); 76.4-77.1° C.; Sp. Gr., 25/25° C.; .8015-.8025; Refractive index, 25° C., 1.3883. Flash point, 4° C. Use—In synthetic rubber. Dow Chemical Co.

ACTIVATED ALUMINUM OXIDE

Al_2O_3. Pure, white, uniform size tablets, porous and strong. Uses—As a desiccant, as a catalyst and as a catalyst support. Containers 1 and 5-lb. glass bottles and 400-lb. steel drums. Harshaw Chemical Co.

AERO AC 50

Diorthotolyl guanidine zinc chloride. M.W. 614. 3. White, odorless, amorphous powder. M.P. 76-82° C, Sp. Gr., 128. Insol. water; sol. alcohol, acetone, benzol. Good stability on storage. Use—delayed action secondary accelerator or activator with the thiazole type of accelerators, in mfr. of rubber products. American Cyanamid & Chem. Corp.

AEROCARB A and B

Cyanide salt bath combination, for treating steel parts. Aerocarb A'" is a gray material, prepared in 2-oz. briquettes: "Aerocarb B," a white granular compound (M.P. 1150-1300° F.). Stable in closed containers; release HCN with acids, but inert to alkalies and solvents. Used jointly as a fused salt bath for case-hardening ferrous objects—which are readily rinsed clean with water after treatment. American Cyanamid & Chem. Corp.

ALBUMEN, EGG (Refined)

High purity, water-soluble egg albumen. Available in packages of ¼, 1, and 5 lbs. Harris-Seybold-Potter Co.

ALFRAMINE DCA

A sulfonation product of a high molecular aldehyde condensate of the aliphatic series. In combination with other less active chemical compounds, Alframine DCA presents a yellowish white, medium heavy powder, with which its colloidal character is completely harmonious. It does not contain any filler, whatsoever. The specific gravity of the powder amounts to 0.7-0.8 which means that one volume of this powder has ¾ the weight of the same volume of water. Uses—textile, fur, leather, paper, electric plating and metal, bottle washing, laundry, rug cleaning industries, and for household use. Michel Export Company.

ALIZARINE BLUE BLACK BA

When dyed on wool by the top chrome method, yields blue-black shades of very good all-round fastness. Also applied by the bottom chrome or the ortho method, the latter being particularly desirable for producing light, mode shades of grey, etc. Color possesses very good fastness to light, carbonizing and rubbing and good fastness to fulling, washing and perspiration. Under artificial light its shade becomes somewhat redder. National Aniline & Chemical Co., Inc.

ALIZAROL BROWN ECB

A chrome brown possessing general good fastness properties which render it particularly valuable for the production of various shades of brown on wool in all its forms. May be

Alphabetical list of companies and their addresses whose products are described on these pages is given on page 568. For your convenience in asking for more detailed information on any of these products we suggest use of coupon on page 546.

applied by all three methods but is particularly intended for application by the metachrome process. National Aniline & Chemical Co.

ALIZAROL BROWN PG

Exhibits its maximum fastness when dyed by the top chrome method. It yields full brown shades of very good fastness to light, fulling, carbonizing and perspiration. It is widely used in combination with National Alizarol Flavine A Conc. National Superchrome Yellow RN and National Alizarol Blue Black BA, for the coloring of khaki and olive drab uniform goods. National Aniline & Chemical Co.

ALKYL ACID PYROPHOSPHATES

$R_2H_2P_2O_7$. These are viscous liquids in which "R" can be methyl, ethyl, propyl, butyl, or amyl. The compounds are soluble in water with reversion to the orthophosphates, the rate becoming rapid in hot solutions. They are all soluble in alcohol, and the propyl, butyl and amyl are completely soluble in vegetable oils (e.g., linseed). Due to the recent increased interest in pyrophosphates, these products should find use in several different fields of application. Victor Chem. Works.

ALLYL ALCOHOL

CH_2:CH.CH_2OH. Mol. Wt. 58.08. B.P. 97° C. Sp. Gr. 20/4° C. 0.852. Refr. Index 20° C. 1.414. Flash-Point ASTM o.c.° F. 70. Sol. in Water Wt. % at 20° C. ∞. Very reactive at the hydroxyl group to form esters, ethers, unsaturated aldehydes, or ketones. Reactive to addition at the double bond. Suggested Uses—Synthesis of pharmaceuticals, industrial chemicals and resins. Developed by Shell Development Co., Selling Agents, R. W. Greeff & Co., Inc.

ALLYL CHLORIDE

CH_2:CH.CH_2Cl. Mol. Wt. 76.53. B.P. 45° C. Sp. Gr. 20/4° C. 0.937. Refr. Index 20° C. 1.415. Flash-Point ASTM o.c.° F. –25. Sol. in Water Wt. % at 20° C. less than 0.1. Highly reactive to replacement at chlorine atom due to allylic structure. Addition readily takes place at unsaturated linkage. Suggested uses—synthesis in pharmaceutical and industrial chemical field to form esters, amines, chlorohydrins, polyhydric alcohols, etc. Synthesis of resins. Fumigants. Developed by Shell Development Co., Selling Agents, R. W. Greeff & Co., Inc.

ALPHA-TERPINEOL

A derivative of gum spirits of turpentine having the odor of lilac. Sp. Gr. about 0.936. B.P. 210-212° C. Soluble in organic solvents and soaps. Insoluble in water. Used in perfumes and antiseptics, as wetting agent for textiles and for flotation of ores. G. & A. Labs., Inc.

ALUMINUM FORMATE, ANHYDROUS, BASIC

White powder having a very faint odor of formic acid and of somewhat coarser granulation than the normal salt, used in waterproofing. Approx. analysis—Al_2O_3 31.0%. HCOOH 62.8%. pH at 5% 4.25. Solubility—Cold water: Basic aluminum formate anhydrous is slowly but completely soluble in cold water to give as high as 35% solutions having a gravity of about 23° Be'. Hot water: Solutions may be made much more rapidly by dissolving the powder in water at 50° C. Concentrations as high as 45% on gravities of 29° Be' may be obtained. Victor Chemical Works.

ALUMINUM METAPHOSPHATE

$Al(PO_3)_3$. Approx. Chem. Analysis: Al_2O_3, 19.0%; PP_2O_5, 79.0%. Loss on Ign., 1.6%. Refractive index (Amor.) = 1.542±0.005. Suggested applications are as a pigment in paper manufacture and as a source of Al_2O_3 and P_2O_5 in special glasses. Victor Chemical Works.

2-AMINO-1-BUTANOL

$CH_3CH_2CH(NH_2)CH_2OH$. Isomeric with 2-amino-2-methyl-1-propanol. Its properties and chemical reactions are similar except that it is slightly higher boiling. Commercial Solvents Corp.

2-AMINO-2-ETHYL-1,3-PROPANEDIOL

$CH_2OHC(C_2H_5)(NH_2)CH_2OH$. The chemical properties of this compound are very similar to those of the corresponding methyl derivative, which has just been described. Due to the low melting point of 2-amino-2-ethyl-1,3-propanediol, it may, even when of high purity, be a viscous liquid rather than a solid at room temperature. Commercial Solvents Corp.

2-AMINO-2-METHYL-1-PROPANOL

$CH_3C(NH_2)(CH_3)CH_2OH$. Colorless, moderately viscous liquid, sol. water and in practically all organic solvents. Its chemical properties are largely determined by the presence of the amino and hydroxy groups in the molecule. Forms stable salts with strong acids and, with higher fatty acids such as oleic and stearic, forms soaps very useful in the preparation of oil-in-water emulsions. Commercial Solvents Corp.

2-AMINO-2-METHYL-1,3-PROPANEDIOL

$CH_2OHC(CH_3)(NH_2)(CH_2OH)$. Colorless odorless solid, sol. water and alcohols. Sol. in alcohols decreases as the molecular weight of the alcohol increases. Its soaps are valuable as emulsifying agents and its use as a CO_2 absorbent is also indicated. Commercial Solvents Corp.

AMMONIATED PHOSPHORATED CASTOR OIL

Viscous, colored oil containing 4% combined P_2O_5 and 0.45% ammonia. It has adhesive properties; one suggested use is as a fireproofed air-filter impregnating agent. Victor Chem. Works.

AMMONIUM ALKYL PHOSPHATES

NH_4RHPO_4. These are concentrated aqueous solutions of the ammonium salts of the mono-methyl, ethyl, propyl, butyl, and amyl o-phosphates. They are insoluble in alcohol. They have found application as humectants and as fireproofiing compounds with the distinctive property that treated materials retain their luster and flexibility. The butyl, and particularly the amyl, derivatives possess good penetrating ability. Victor Chem. Works.

AMMONIUM ETHYL PHOSPHATE

75% Soln. in water. Water-white to yellow tinge. Ammoniacal odor. Sp. Gr. 1.23 at 25° C. pH 75% soln. 7.0-7.2. Viscosity at 25° C. 60 centipoises. Not stable to heat. When subjected to elevated temperature for any length of time as solution or while on any article will liberate ammonia with reduction in pH. Suggested use—as flame proofing agent for paper, textiles, etc. Container—55 gal. non-returnable steel drum. Monsanto Chemical Co.

AMMONIUM HEXAPHOSPHATE DINITRIDE

$(NH_4)_6P_6O_{16}N_2$. White, free-flowing powder, somewhat hygroscopic. It is soluble in water and is non-crystallizable. Its dilute solutions have a pH of 4.8. Its outstanding property is that it softens hard water by forming soluble complexes with calcium and magnesium ions. An efficient fireproofing compound with the added advantage that it does not render the treated fabric stiff or harsh to the feel. Stable in alkaline solutions up to pH 8.5; decomposes at 130° C. with loss of ammonia. Victor Chem. Works.

AMMONIUM LAURATE (Anhydrous) S

Tan-colored, waxy material, M.P. 48-50° C.; sol. alcohol and mineral oil in the cold, sol. hot vegetable oils. 10% aqueous dispersion has a pH of 7.7. Readily dispersable in water, it is an excellent emulsifying agent for the production of oil-in-water emulsions with high oil content, free from ammonia odor. Glyco Products Co., Inc.

AMMONIUM STEARATE (Anhydrous) S

Tan-colored, waxy solid, M.P. 74-76° C. Sol. hot alcohols, oils, and hydrocarbon solvents. Sp. Gr. at 25/25° C., 0.889; 3% aqueous dispersions in water has a pH of 7.5 at 25° C. Forms stable, white paste or fluid emulsions when dispersed in boiling water, cooling while stirring. Suitable for cosmetic purposes where, previously, ammonium soaps were ruled out because of odor. As a water dispersion, makes an excellent waterproofing agent for mixing cements, mortars, etc. Glyco Products Co., Inc.

AMMONIUM SULFAMATE TECHNICAL

$NH_4SO_3NH_2$. A commercial form of Ammonium Sulfamate which is very effective for killing a wide variety of obnoxious weeds. Particularly good results have been obtained in the control of poison ivy, ragweed, Bermuda grass and many other common weeds. Non-inflammable, fire retardant, non-toxic to animals. E. I. du Pont de Nemours & Co., Inc.

AMMONIUM THIOCYANATE (Ammonium Sulfocyanide)

NH_4CNS. Colorless, deliquescent crystal. Specific gravity 1.3. Melting point 159° C. Decomposes 170° C. Very soluble in water, alcohol. Used in preparation of thioureas and other organics; dyeing and printing textiles; photography; weighting silk; coloring zinc; freezing solutions. General Chemical Company.

ANALYTICAL SODIUM CHLORITE

$NaClO_2$. New laboratory reagent, a purified form of Technical Sodium Chlorite. A white, finely crystalline solid, anhydrous, not hygroscopic, very stable, readily soluble in hot or cold water. Particularly useful in the pulp and paper industry for the analysis of sulfite cooking liquors and in general as a volumetric oxidizing agent. Containers—½, 1 & 2-lb. bottles. The Mathieson Alkali Works (Inc.).

ANHYDROUS HYDROGEN CHLORIDE

HCl. Moisture-free gas packed at 1000 lbs. pressure. Soluble in organic solvents. B. P., 85.03° C. M. P., 112° C. Critical temperature, 51.4° C. Critical pressure, 81.55 atmospheres. Density at the critical temperature and pressure, .424 grams per cc. Density of the solid, 1.503 grams per cc. Uses—Catalytic organic synthesis. Containers—5-lb. and 50-lb. steel cylinders. Harshaw Chemical Co.

ANTI-RUST

A powdered rust inhibitor for automotive cooling systems. Keeps the radiator free from rust. Helps to maintain engine efficiency. Harmless to the hose, aluminum and all metal parts. Not affected by standard anti-freeze or stop-leak solutions. Easy to use—just pour contents into radiator and forget it. Use one package each season. E. I. du Pont de Nemours & Co., Inc.

AQUOID 25-RDX

Aqueous dispersion of carbon black designed and recommended for use in compounding of latex. United Carbon Company, Inc.

AQUOID 45-RX

Aqueous dispersion of carbon black having a pigment concentration of 40%. This product is specially designed for use in the coloration of black paper stocks, board stocks and coated papers. United Carbon Company, Inc.

"ARIDEX" WR

A new aluminum wax emulsion type water repellent with improved stability in processing. It imparts high repellency to all types of textile fibers and fabrics. E. I. du Pont de Nemours & Co., Inc.

AROCHEM 55

Modified phenolic of high phenol-formaldehyde condensation content. It bodies well; its varnish films are hard and tough, color-retentive and

alkali-proof. Versatile for use in porch and deck paints, floor varnishes and industrial and shelf goods in general, including whites. Acid No., 13-18; M.P., 140-145° C.; lbs. per gal. at 20°C., 9.2. Stroock & Wittenberg Corp.

AROCHEM 60 X LIGHT

A specially-constructed, high condensation modified phenolic, having good bodying properties with oils other than China Wood, and giving films which are hard, tough and chemically resistant. Use, similar to that of the "55"; its additional bodying characteristics make it valuable also for gloss printing-ink bases, and overprint varnishes. Acid No., 12-17; M.P., 157-162° C.; lbs. per gal. at 20° C., 9.2. Stroock & Wittenberg Corp.

AROCHEM 75

Has an even higher phenol-formaldehyde condensation content than the "60" for use along the same general lines as the latter. Its M.P. is higher and is recommended for very hard quick-drying varnishes, like rubbing varnishes, as well as for oils other than China Wood. Acid No., 23-28; M.P., 167-172° C.; lbs. per gal. at 20° C., 9.2. Stroock & Wittenberg Corp.

AROCHEM 80

Modified phenolic, specially-constructed for shelf goods, possessing necessary quick-drying properties, hardness and color, retentiveness. Whites made with it are very white and remain so. Acid No., 12-18; M.P., 135-140° C.; lbs. per gal. at 20° C., 9.2. Stroock & Wittenberg Corp.

AROCHEM 90 X LIGHT

Modified phenolic similar to "Arochem 95 X-Light," with slightly lower M.P. and degree of hardness than the "95". This is a versatile, economical resin. Used for industrial varnishes, and enamels, either the air-drying or baking type. Also used in package goods, but not quite as color-retentive as the "80". Acid No., 10 M.P., 130-135° C.; lbs. per gal. at 20° C., 9.2. Stroock & Wittenberg Corp.

AROCHEM 120

Modified phenolic, high in phenol-formaldehyde, finding large use for tough, alkali-resistant varnishes, porch and deck paints, etc. An excellent resin where color-retention and yellowing properties are not of first importance. Not recommended for whites. Can also be used with oils other than China Wood. Acid No., 12-18; M.P., 140-145° C.; lbs. per gal. at 20° C., 9.3. Stroock & Wittenberg Corp.

AROCHEM 130

Unique, processed Congo, phenol-formaldehyde combination. As may be expected from its composition, it produces varnishes which combine depth of film of the naturals with hardness, speed of dry and chemical resistance of the phenolics. Acid No., 15-20; M.P., 140-145° C.; lbs. per gal. at 20° C., 9.2. Stroock & Wittenberg Corp.

AROCHEM 505

A modified maleic with a little lower M.P than "Arochem 520." Compatible with nitrocellulose and ethyl cellulose. Also used in color-retentive varnishes, both air-drying and baking. Acid No., 10-15; M.P., 110-115° C.; lbs. per gal. at 20° C., 9.2. Stroock & Wittenberg Corp.

AROCHEM 510

A modified maleic like the "505," with M.P. between that of the "505" and "520." Has unusual property, for a material of this type, of being entirely sol. mineral spirits and other petroleum hydrocarbons. Possible to use it cold cut in combination with alkyds which are extended with mineral spirits, to improve lustre and hardness. Acid No., 18-23; M.P., 130-135° C., lbs. per gal. at 20° C., 9.2. Stroock & Wittenberg Corp.

AROCHEM 520

An unusually pale, high melting, modified maleic for use in lacquers and very color-retentive, air-drying and baking varnishes. Has excellent tolerance for ethyl alcohol and such lacquer oils as "ADM 100." In lacquers, particularly sanding sealer, has exceptionally rapid solvent release. Acid No., 28-33; M.P., 140-145° C.; lbs. per gal. at 20° C., 9.2. Stroock & Wittenberg Corp.

AROFENE 700

Pure phenol-formaldehyde condensate, practically water-white, for spar varnishes and general varnish, varnish resin fortification, to improve speed and hardness of dry and chemical resistance. Works well with oils other than China Wood. Acid No., 50-60; M.P., 80-90° C.; lbs. per gal. at 20° C., 9.2. Stroock & Wittenberg Corp.

AROPLAZ 905

Pure alkyd resin (glycerol phthalate type) short in non-drying oil, recommended for use with nitrocellulose. Gives very hard, light-colored and color-retentive films, with exceptionally good durability and cold-check resistance. Essentially insol. alcohol and petroleum hydrocarbons but readily extended with toluol and lacquer solvents. Stroock & Wittenberg Corp.

AROPLAZ 930

Pure, specially-constructed alkyd, short in non-drying oil, particularly designed for nitrocellulose lacquers to which it imparts extreme flexibility and adhesion over wide ranges of temperature. Used in lacquers for coating such materials as rubber, fabrics, leather and paper. Sol. ethyl alcohol, coal-tar hydrocarbons, and lacquer solvents. Very slightly sol. petroleum hydrocarbons. Stroock & Wittenberg Corp.

AROPLAZ 940

A medium drying oil, pure alkyd, for general utility work. Has excellent color and color retention, extendable with mineral spirits in any proportion, and used for brushing, spraying, air-drying or baking. Stroock & Wittenberg Corp.

AROPLAZ 960

A medium-to-long, non-drying oil combination, pure alkyd, designed for use as architectural enamel base for package goods and industrial work. Has excellent color and color retention and will brush without sagging or blooming. Can be extended entirely with petroleum hydrocarbons. Stroock & Wittenberg Corp.

ATLAS G-904, MANNITAN MONOLAURATE

Viscous, oily liquid. Setting P., 15-20° C. Refract. ind. 1.475 at 25° C. Viscosity, 2,000-4,000 cp. at 25° C. Acid no., below 6. Water-insoluble. Soluble most organic solvents. Stable in solutions pH 0.5-12.0 at 25° C. Highly surface active. An excellent oil-in-water emulsifier for animal and vegetable oils and fats. Cont.—1, 5, 55 gals. (8.5 lbs. per gal.). Atlas Powder Co.

ATLAS G-908, MANNITAN MONOSTEARATE

Synthetic vegetable-type wax, almost colorless. S. P. 45-55° C. Acid no., below 6. Sol. lower alcohols and alcohol-ethers. Excellent oil-in-water emulsifier for vegetable oils and waxes, for cosmetic preparations, polishes, creams, etc. White emulsions without soapiness. Cont.—1, 5, 55 gals. (8.5 lbs. per gal.). Atlas Powder Co.

AURAMINE SP. CONC.

Recent addition of a basic yellow having the same general fastness properties as "Auramine O Conc." but possessing superior solubility in alcohol. National Aniline & Chemical Co., Inc.

BC VOLCLAY

Bentonite dust. Particle size, less than 5 microns. The grit that occurs in natural Wyoming Bentonite has been removed by a special process. American Colloid Co.

BARNSDALL SPECIAL WAX

M. P., 160-165° F. Available in colors black, amber and white. A plastic micro-crystalline wax derived from petroleum; used where flexible waterproof coatings are required; chemically inert and free from odor and taste. Useful in electrical insulation, candles, crayons, wax paper, etc. Bareco Oil Company.

BARNSDALL SPECIAL WAX

M. P., 180-185° F.. Available in colors black, amber, and white. A brittle micro-crystalline wax derived from petroleum. Used to replace Carnauba wax, Montan wax, and Ozokerite wax. Useful in electrical insulation, candles, crayons, wax paper, etc. Bareco Oil Company.

BEACON WAXES, GROUP 1

Series of hard, high-melting synthetic waxes. Includes 19 products ranging in color from light brown to black; M.P. of this group ranges from 58° to 85° C.; acid no., 13-26; hardness, 6. Nearly all are brittle, with high gloss. Uses—waterproofing agents for paper, textiles, etc.; mfr. shoe and wood polishes, phonograph records, carbon paper, candles; finish for leather; hardening of candles and paraffin wax. The Beacon Co.

BEACON WAXES, GROUP 2

Series of 13 synthetic waxes, of about the hardness of Candelilla. Yellow to brown; hardness, 4 or 5. M.P. range, 51° to 85° C. Tough materials, buffing to a high gloss. Uses—mfr. Carnauba substitutes for furniture and leather polishes; mfr. cements, candles, varnishes, shoe polishes, electrical insulation, sizes for rubber and paper. The Beacon Co.

BEACON WAXES, GROUP 3

Series of 16 products of hardness approximately equal to that of bleached Montan. Color ranges from cream to tan. Hardness, 3-3½. M.P. varies from 38° to 59° C., acid no. from 2 to 83. Uses—mfr. paints, varnishes, candles, soaps, adhesives, electrical insulation, polishing compositions, Carnauba and Beeswax substitutes. The Beacon Co.

BEACON WAXES, GROUP 4

Series of 9 synthetic products, about as hard as Beeswax. M.P. range, from fluid at room temperature up to about 54° C. Color, ivory through buff. Hardness, 1-2½. Acid no., 9-86. Uses—mfr. wood, leather, and metal polishes; adhesives, sealing compositions, plasticizers, paper and textile sizes; cosmetics; engraving and lithography; candles; Beeswax substitutes. The Beacon Co.

BEACON WAXES, GROUP 5

4-water-emulsifiable waxes, hardness 2-6. M.P., from 40° to 76° C. Uses—mfr. polishing materials, sizes. The Beacon Co.

BEETLE RESIN EMULSION #19

Low-cost urea-formaldehyde material, replacing starches and gums in textile processing. Used to make permanent or semi-permanent starchless finishes, depending on the heat treatment. Imparts full, mellow hand, is stable to light, requires no soaping after drying; suitable for application to percales and spun rayon dress fabrics. Calco Chem. Div., American Cyanamid Co.

BEETLE TEXTURE RESIN #250

Urea-formaldehyde syrup, completely miscible in waterd. Contains 80% resin, stable even on long standing. Used in water solutions as a textile finish, rendered insol. and perm. to washing by heat treatment. Chief applications are for sizing and glazed chintz effects. Calco Chem. Div., American Cyanamid Co.

BENZYL "CELLOSOLVE"

(Ethylene Glycol Monobenzyl Ether)

$C_6H_5OCH_2OCH_2CH_2OH$. Has the highest boiling point of the alcohol-ethers commercially available. It is stable in the presence of acids and alkalies, is highly soluble in dilute alcohol, has a mild odor, evaporates slowly, and is susceptible to chemical modification through the benzene ring and the hydroxyl group. It is suitable for use as a high-boiling solvent in lacquers, dyestuff pastes, printing inks, and in coating compositions for paper, leather, and cloth. Sp Gr. at 20/20° C., 1.0670 to 1.0720; boiling range, 248 to 260° C.; available in 1 gal. cans and 5-gal. and 55-gal. drums. Carbide & Carbon Chemicals Corp.

BENZYL SULFONYL CHLORIDE

$C_6H_5CH_2SO_2Cl$. White crystalline solid. M. P., 90-92° C. Useful intermediate for the modification of dyestuffs, pharmaceuticals, plasticizers and other synthetic chemicals. Heyden Chemical Corp.

BETA-METHYLNAPHTHALENE

b-$(CH_3)\ C_{10}H_7$. M.W. 131.19. Fr. P., 31-33° C. White, crystalline solid, sometimes semi-fluid at room temperatures. Uses—intermediate in mfr. dyestuffs; mfr. insecticides; high boiling special solvent. Reilly Tar & Chem. Corp.

BLAC-KING

An aqueous dispersion of carbon black especially developed for use as a coloring agent for cement and concrete mixes. Has a pigment concentration of 25%. Used quite extensively in coloring of concrete highways, etc. United Carbon Company, Inc.

BORIRESIN

Viscous, water-soluble synthetic resin; amber color. Miscible with polyhydric alcohols; will not freeze or crystallize at —10° C. Forms glossy, transparent films which are non-tacky and become extremely hard. The Beacon Co.

BRILLIANT BLUE 5B

A basic blue which on tannin mordanted cotton, silk and paper, produces bright reddish blue shades. In phosphotungstic lakes it yields shades even brighter than those produced by a combination of National Brilliant Blue 60 and National Victoria Pure Blue BO. National Aniline & Chemical Co.

BRILLIANT INDIGO 4BJD PRINTING PASTE

Vat printing blue recently added to company's line, particularly adapted to the printing of rayon. National Aniline & Chemical Co., Inc.

BUG REMOVER

An efficient cleaning powder for removing bug residue from fenders, windshield frames, etc. Contains Duponol. Reacts quickly on the bugs without harming the car finish. Is packed in a shaker top container, and is easy to use. Good for cleaning windshields, too. E. I. du Pont de Nemours & Co., Inc.

n-BUTYLAMINE

$CH_3CH_2CH_2CH_2NH_2$. Has a characteristic ammoniacal odor, and with fatty acids forms soaps which show unusually high degree of solubility in hydrocarbons. It combines readily with acids, aldehydes, olefin oxides, chlorhydrins, and organic sulfur compounds, and is a useful intermediate in making emulsifying agents, dyestuffs, rubber chemicals, flotation agents, corrosion inhibitors, and insecticides. Sp. Gr. at 20/20° C., 0.7385; B. P. 77.1° C.; completely miscible with water; lb. per gal. at 20° C., 6.15. Carbide and Carbon Chemicals Corp.

BUTYL BENZALACETONE OXALATE

$(C_6H_5)CH = CH — CO — CH = C(OH)\text{-}COOC_4H_9$. Light-screen medium, used as an ingredient of "sun-tan" lotions. Prevents light transmission up to 4500 Angstroms. U. S. Industrial Chemical, Inc,

BUTYL "CARBITOL" ACETATE

$CH_3COOCH_2CH_2OCH_2CH_2OC_4H_9$. Water-in soluble liquid; B.P. 246.4° C; nitrocellulose dilution ratio with xylene, 1.8. Miscible with most organic liquids; dissolves many oils, resins, and gums. With such a high boiling point, it is useful in formulations of nitrocellulose and synthetic resin coatings. In fact, its boiling point is so high that if there are substances present which are good solvents for this ester, it will be retained by the film and act as a plasticizer. Carbide and Carbon Chemicals Corp.

"BUTYL CELLOSOLVE" PALMITATE S 187

Amber-colored, semi-solid paste. Sp. Gr. at 25° C., 0.89° C. Free fatty acid, less than 4%. Saponification value: 155-160. M. P., 44° C. Insoluble in water. Soluble in alcohol and most organic solvents, mineral oil and vegetable oils. Glyco Products Co., Inc.

"BUTYL CELLOSOLVE" LAURATE S 186

Dark red oil. Sp. Gr. at 25° C., 0.90. Free fatty acid, less than 3%. Iodine value, less than 1. Insoluble in water. Soluble in alcohol, most organic solvents, mineral and vegetable oils. Glyco Products Co., Inc.

n-BUTYL DIETHANOLAMINE

Water white to pale straw-colored liquid of slightly ammoniacal odor. Sp. Gr. at 20° C., 0.97; dist. range (Engler), 272-315° C. Sharples Solvents Corp.

n-BUTYL MONOETHANOLAMINE

Normal Butyl Monoethanolamine is a water-white liquid possessing a very faint amine-like odor. The specific gravity at 20° C. is 0.892 and the Engler distillation range is 194-204° C. The Sharples Solvents Corp.

CALCO FOOD COLORS

Two new food colors, FD&C Orange No. 2 and FD&C Red No. 32, oil-sol. dyes, were added this year ot the exclusive Federal list of permissible coal-tar food colors. Proven harmless for use in foods, drugs, and cosmetics. FD&C Orange No. 2 is 1-orthotolylazo-2-naphthol; FD&C Red No. 32 is 1-xylylazo-2 naphthol. Calco Chemical Div., American Cyanamid Co.

CALCONYL COLORS

Series of stabilized azoic ice colors for printing fast shades on linen, cotton, and rayon. Characterized by high stability, even after long storage, producing exceptional uniformity of shade and strength. Powders contain the stabilized diazo together with a coupling component (usually, a beta-oxy naphthoic acid derivative). After printing, color is developed on the fiber in an acid agar in the usual manner. Colors are available as both solutions and powders. Calco Chemical Div., American Cyanamid Co.

CALCOTEX PRINTING EMULSIONS

New departure in the field of textile printing; pigmented synthetic resins emulsified in water, applied to the cloth on standard printing machines, permanently fixed by a short cure. Make possible elimination of steps in processing, observation of the design immediately after printing, and the use of fine line engravings. Made in a full range of colors with excellent fastness to light, washing and crocking. Calco Chemical Div., American Cyanamid Co.

CARBANTHRENE BROWN NR PASTE

An anthraquinine type of vat dye which produces chocolate brown shades of very good fastness to light, washing, perspiration and cross dyeing. Well suited for pad-jig work. National Aniline & Chemical Co.

CARBANTHRENE RED BROWN R DOUBLE PASTE

Produces on cotton, rayon or linen, reddish brown shades of good fastness to sea water, washing, perspiration and alkali; excellent fastness to cross dyeing and water. Reduces readily, levels well; suitable for use in open tubs or machines. National Aniline & Chemcal Co., Inc.

"CARBITOL" STEARATE S 178

Tan-colored paste. Sp. Gr., 0.91. Free fatty acid, less than 5%. Insoluble in water. Soluble hot in alcohol and most organic solvents and oils. Glyco Products Co., Inc.

"CARBITOL" RICINOLEATE S 179

Dark red oil. Sp. Gr., 0.96. Free fatty acid, less than 5%. Titre, less than 0° C. Insoluble in water. Soluble in alcohol and most organic solvents. Glyco Products Co., Inc.

"CARBITOL" PHTHALATE S 180

Pale yellow liquid resin. Sp. Gr., 1.15. Saponification value, 270-290. Partially soluble in water. Soluble in alcohol, toluol, acetone, methyl and ethyl acetate. Insoluble in naphtha. Glyco Products Co., Inc.

"CARBITOL" LAURATE S 187

Orange-colored, semi-solid paste. Sp. Gr., 0.84. M. P., 19-20° C. Free fatty acid, less than 5%. Iodine value, 7-8. Titre: M.P. 19-20° C. Insoluble in water. Soluble in alcohol and most organic solvents and oils. Glyco Products Co., Inc.

"CARBITOL" CITRATE S 181

Yellow, viscous resin. Sp. Gr. at 25° C., 1.28. Saponification value, 350-375. 5% dispersion in water has a pH of 2.3. Soluble in water, alcohol, acetone and ethyl acetate. Insoluble in mineral oil, naphtha and vegetable oils. Glyco Products Co., Inc.

CARBON BLACK DISPERSION IN LITHO VARNISH

Developed as a high-grade printing ink material for mfr. offset and half-tone inks. Black is in 30% concentration, eliminating necessity for grinding a vehicle and pigment together. United Carbon Co., Inc.

CARBON BLACK DISPERSION IN MINERAL OIL

Recently developed for formulation of carbon copy inks. Contains 45% black in low-viscosity mineral oil. Represents very high degree of dispersion in the medium, eliminating necessity for grinding in compounding carbon copy inks. Can be extended to lower concentrations by mixing with appropriate oils, waxes, etc. United Carbon Co., Inc.

"CARBOWAX" COMPOUND 1500

Is a non-volatile, slightly hygroscopic compound resembling petrolatum in consistency. It is unique in that it is soluble in both water and aromatic hydrocarbons, and it is used as a size, softener, humectant, lubricant, preservative, and adhesive——especially for textiles, paper, leather, and other porous materials. It is also a plasticizer for casein, gelatin, glue, cork, in special printing inks, and cellulose transfer films, and it has numerous other applications based on its special properties. Density at 20° C., 1.152; M. P., 35 to 37° C.; viscosity, 78 sec. at 210° F.; available in 1 gal. cans, and in 5-gal and 45-gal. drums. Carbide and Carbon Chemicals Corp.

"CARBOWAX" COMPOUND 4000

Is an essentially non-volatile, non-hydroscopic water-soluble and aromatic-hydrocarbon-soluble compound resembling paraffin wax in consistency. It is used as a binder suitable for water paints and crayons, kalsomines, paper coatings, sizing materials, ceramic slips and glazes for vitreous coatings, abrasive cakes, and shoe polish. Density at 20° C., 1.203; M. P., 50 to 53° C.; viscosity, 418 sec. at 210° F.; available in 1 gal. cans, and in 5-gal. and 45-gal. drums. Carbide and Carbon Chemicals Corp.

CATION ACTIVE COMPOUNDS (A and B)

These products disperse in water giving milky, neutral solutions which foam and wet-out as well, exhibiting substantive properties toward paper, cotton, silk, and wool. They are recommended for use in the paper, textile and related industries. Victor Chemical Works.

CATOL #607

This material is a quaternary ammonium derivative having pronounced bactericidal properties with relatively low toxicity. The Emulsol Corp.

CATOL—1

A cationic reagent soluble in water, used as a softener for acetate and viscose fabrics. The Emulsol Corp.

CATOL—2

A quaternary ammonium derivative, soluble in water, for use in the textile industry and for ore flotation. The Emulsol Corp.

CATOL—3

A cationic reagent, soluble in water, for use in textile processing, cosmetics and ore flotation. The Emulsol Corp.

CATOL—M

This is a wax-like solid, having excellent emulsifying properties, particularly in acid media. Used in cosmetic creams containing aluminum chloride. The Emulsol Corp.

CAUSPLIT CEMENT

A resinous cement possessing the unusual properties of resisting both Acids and Alkalies. It is made with a mortar by mixing only Causplit Powder with Causplit Solution. This cement is used principally to bond acid-proof materials such as tile or stoneware, but may be used as a coating material.

Causplit Cement is used principally in the chemical and pulp and paper industries. It has been used quite often for bonding soapstone pieces for hoods, sinks, etc., where both acids and alkalies are used. Pennsylvania Salt Mfg. Co.

CELITE No. 281

New-type, very fine, light-weight amorphous silica recommended as an extender for both exterior and interior paints. The easiest grinding, pure white inert extender readily available. Has good suspension qualities, great bulk, high body, good brushing, leveling and application properties. Johns-Manville.

CELITE No. 535

Designed especially for high flow and good clarity, particularly for viscous and semi-viscous materials such as syrups, heavy varnishes and waxes. Like other "Celite" filter-aids, it is inert so that it does not affect the chemical or physical characteristics of the filtrate. Johns-Manville.

CELITE No. 545

An especially high flow rate filter-aid, particularly for clarifying highly viscous materials. A finely divided, porous light-weight material milled from especially pure diatomaceous silica, which is inert and does not affect the chemical or physical characteristics of the filtrate. Johns-Manville.

"CELLOSOLVE" RICINOLEATE S-184

Dark red oil. Sp. Gr., 0.94. Free fatty acid, less than 4%. Titre, less than 0° C. Insoluble in water. Soluble in alcohol and most organic solvents and vegetable oils. Glyco Products Co., Inc.

"CELLOSOLVE" STEARATE S 183

Dark brown oil. Sp. Gr., 0.88. Free fatty acid, less than 4%. Titre, 16° C. Insoluble in water. Soluble hot in alcohol and most organic solvents and oils. Glyco Products Co., Inc.

"CELLOSOLVE" LAURATE S 182

Dark brown oil. Sp. Gr., .89. Free fatty acid, less than 4%. Titre, less than 0° C. Insoluble in water. Soluble in alcohol and most organic solvents and oils. Glyco Products Co., Inc.

CERESIN WAX #600

Furnished in either the white or yellow form; it has a melting point of about 140-142° F., and is packed in cases weighing approximately 100 pounds each in the Flake form. This grade of Ceresin Wax, due to its uniformity and high melting point, is today being used by a variety of different industries. Innis, Speiden & Co.

CERIUM STEARATE

Ce $(C_{18}H_{35}O_2)_3$. White powder, M. P. 100-110° C. M. W., 989. Washed Ash, 18.5%. Soluble Ash, 0.2%. Insoluble in polar liquids. but partly soluble in benzol and petroleum oil. Due to the metal it carries cerium stearate has been suggested as a catalyst. The relative inertness, waxy texture and organic nature suggest its application in special or modified uses paralleling those for general metallic soaps in moulding plastics, greaseless bearings, wax compounding, wire drawing, and other applications where a waxy, stable, non-tacky substance is required. Available in 50-lb. cartons. Metasap Chemical Co.

o-CHLORACETOACETANILIDE

$CH_3COCH_2CONHC_6H_4Cl$. White, crystalline solid, M.P. about 107° C.. Susceptible to numerous condensation and substitution reactions which characterize compounds containing a reactive carbonyl and methylene group. Under the influence of dehydrating agents, ring closure occurs with the formation of chlorhydyroxy methyl quinolines. The methylene group may be acylated or alkylated with chlorides by standard methods. This product condenses with phenylhydrazines, particularly the nitro derivatives, to give corresponding hydrazones. Carbide and Carbon Chemicals Corp.

CHLORINATED TURPENTINE

Chlorinated turpentine is a novel solvent being derived from Pinene, such as Bornyl Chloride, Fenchyl Chloride and Cyeme Chloride. Its boiling range is approximately 150-250° C., and has a specific gravity of approximately 1.980. Its solvent property is superior to that of turpentine and its use is suggested as a mould preventative in paints and varnishes, as a rubber softener and as an intermediate for making chemicals. G. & A. Labs, Inc.

β-CHLORO ALLYL ALCOHOL

$CH_2{:}CCl.CH_2OH$. Mol. Wt. 92.53. B.P. 134° C. Sp. Gr. 20/4° C. 1.162. Refr. Index 20° C. 1.459. Flash-Point ASTM o.c.° F. 140. Sol. in Water Wt. % at 20° C. 10. Stable chlorine linkage. Does not form epoxides. Esters, ethers, etc., readily formed at hydroxyl group. Suggested uses—synthesis. Resin formation. Developed by Shell Development Co., Selling Agents, R. W. Greeff & Co., Inc.

2-CHLORO-4-tert-AMYL PHENOL

Water-white liquid, aromatic odor. Sp. Gr. at 20° C., 1..11; dist. range (Englers), 253-264.5° C. Uses—mfr. insecticides and antiseptics; mfr. additive compounds for lubricating oils. Sharples Solvents Corp.

2-CHLORO-4,6-DI-tert-AMYL PHENOL

Pale straw-colored liquid, almost no odor. Sp. Gr. at 20° C., 1.01; B.P. (22 mm.), 160-179° C. Sharples Solvents Corp.

2-CHLOROBUTENE-2

$CH_3CCl{:}CH.CH_3$ (2 geometric isomers) Mol. Wt. 90.56. B.P. 67 (cis) 62 (trans).° C. Sp. Gr. 20/4° C. 0.913. Refr. Index 20° C. 1.421. Flash-Point ASTM o.c.° F. less than 30. Sol. in Water Wt. % at 20° C. less than 0.1. Very stable to hydrolysis due to vinyl structure. Readily halogenated at double bond. Suggested uses—cleaning and degreasing solvents. Synthesis. Developed by Shell Development Co., Selling Agents, R. W. Greeff & Co., Inc.

CHOVIS

Plastic fatty synthetic phosphatide, sol. in oils. Has power to imbibe aqueous media; promotes water-in-oil emulsions, reduces chocolate liquor viscosities, and other suspensions of solids in oily media. Used in mfr. chocolate. printing inks, and paints. The Emulsol Corp.

CHROME REFINISHING KIT

Complete kit for renewing and preserving the beauty of chromium-plated auto parts. Includes: Tube of Du Pont Chrome Cleaner—powerful paste cleaner made especially for removing rust spots and stains from chromium. Restores the original shine if the chromium is not badly corroded; Can of Du Pont Chrome Lacquer—Clear, methacrylate lacquer which will waterproof the chromium and protect it from moisture, sal spray, calcium chloride and other elements which cause rust and corrosion. Dries in 15 minutes, forms a clear invisible film of great durability; Soft Bristle Brush—For applying the Lacquer. E. I. du Pont de Nemours & Co. (Inc.).

CHROMIUM OLEATE

Cr. 5.8%. Green waxy material, soluble in mineral spirits and oils. Uses—In compounding greases and for supplying a soluble form of chromium for impregnating fabrics. Containers—400-lb. steel drums. Harshaw Chem. Co.

COLLABAN

Fine, white, water-soluble powder. Forms colloidal solutions. 10% solution in water has a Sp. Gr. of 1.05 and a viscosity at 20° C. of 7.4 centipoises. Uses—photographic compositions; sizing; protective colloid; cosmetics, etc. Available in various size packages. Harris-Seybold-Potter Co.

COOLING SYSTEM CLEANSER

Acid-type cleanser for cleaning automotive cooling systems. Removes rust, scale and scum thoroughly without injuring the hose or metal parts. Stops overheating—increases engine efficiency. Unlike many acid cleaners, which merely loosen the rust particles from the cylinder walls, the "Cleanser" actually dissolves the rust and makes the entire cooling system chemically clean—it even dissolves any hard water scale which may have formed in the radiator passage. Thus, the rust and scale flow out with the dirty water when the radiator is drained. Because of this unique action, reverse flushing is unnecessary. E. I du Pont de Nemours & Co. (Inc.).

COOLING SYSTEM SEALER

Repairs leaks in the radiator and engine block quickly and securely without clogging the passages. Absolutely harmless to hose, aluminum or other metal parts. Functions equally well in water and standard anti-freeze solutions. Stops formation of rust. E. I. du Pont de Nemours & Co., Inc.

COPPER CARBONATE

A high-grade material containing 56% copper; has fine particle size, and is light, fluffy, and very adherent. An excellent dusting fungicide for seed wheat to control smut or bunt; its purity and uniformity make it especially desirable for copper plating. Tennessee Corp.

"26" COPPER FUNGICIDE

Water-insoluble copper fungicide containing 26% copper; of fine particle size and very stable. Uses—as a dust or spray for control of fungus diseases on fruits and vegetables, especially for apples and other fruits. Tennessee Corp.

"34" COPPER FUNGICIDE

Water-insoluble fungicide containing 34% copper; has fine particle size and good stability. Uses—spray and dust for control of fungus diseases of fruits and vegetables. Tennessee Corp.

COPPER HYDROXIDE-NAPHTHENATED

Cu 50%. Fine green powder insoluble in water, mineral and vegetable oils, and only slightly soluble in petroleum solvents. Suggested uses—Treatment of seeds, as a fungicide and as an ingredient of ship bottom paints. Experiments show that this material is many times stronger in fungicidal action than other insoluble copper fungicides of equal copper content. This is accounted for by the high toxicity of the copper ion as well as the naphthenate radical. Harshaw Chemical Co.

COPPER OXYCHLORIDE SULPHATE

Cu 55-57%. Fluffy light blue powder, minute particle size, low apparent gravity. This ma-

terial is essentially penta (5) basic. Uses—Agricultural fungicide for dusting, spraying or seed treatment. High basicity insures high toxicity to fungi but safety to foliage. It has a maximum coverage when sprayed and because of its low density, a minimum tendency to segregate when used as a dust. Containers—175-lb. barrels. Harshaw Chemical Co.

CORESINBLACK

Specially ground colloidal dispersion of carbon black in alkyd resin. Used to make fine quality black synthetic resin finishes. Contains 18% carbon black, 32% resin, 50% solvent. Formulated into enamel by merely adding additional resin solution with the appropriate amount of solvent and driers. These enamels, compared with similar products prepared by ordinary methods, are characterized and known for exceptional jetness of color, blue tone, high gloss, and maximum weathering resistance. Binney & Smith Co.

COSMETOL

This is a solution of a synthetic detergent. Use—base for soapless shampoo. The Emulsol Corp.

COSOL

Refined, highboiling, aromatic solvent furnished in three grades, Cosol No. 1, 160-235° C., specific gravity, .873; Cosol No. 2, 165-250° C., specific gravity, .912; Cosol No. 3, 200-255° C., specific gravity, .946. Cosol has high solvent power, high flash point. Slow evaporating, high gravity, non-corrosive, and free from naphthalene and tar acids. Practically water-white color, low distillation residue, and mild pleasant odor. Useful in copper wire enamels, reclaiming processes, inks, synthetic enamels, slow evaporating coatings, and wherever powerful, mild odored,, slow evaporating solvents are required. Shipped in 55-gal. drums and in tank cars. The Neville Co.

CROTYL ALCOHOL

$CH_3.CH{:}CH.CH_2OH$. Mol. Wt. 72.10. B.P. 123° C. Sp. Gr. 20/4° C. 0.853. Refr. Index 20° C. 1.430. Flash-Point ASTM. o.c.°F. 105. Sol. in Water Wt. % at 20° C. 14.2. Very reactive at the hydroxyl group to form esters, ethers, unsaturated aldehydes, or ketones. Reactive to addition at the double bond. Suggested uses—synthesis of pharmaceuticals, industrial chemicals, and resins. Developed by Shell Development Co., Selling Agents, R. W. Greeff & Co., Inc.

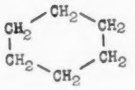
CUPRIC OXIDE HYDRATED

$4CuO.H_2O$. Fine, dark brown powder. Uses—Fungicidal pigment, agricultural fungicide and in the process industries as a highly reactive form of copper oxide. It is an excellent fungicidal pigment for such uses as ship bottom paints and other anti-fouling compositions. Compatible with oils and adheres well to glossy surfaces. As an agricultural fungicide, tests have shown that it has specific uses such as the control of cherry leaf spot. Containers—175-lb. barrels. Harshaw Chemical Co.

CYCLOHEXANE

C_6H_{12}. M.W. 84.15. Water-white (under 20 Hazen) liquid, B.P., 79.0-82.0° C.; 95% distills within 1.5° C. Flash P., under 10° F.; Sp. Gr. at 25/4° C., 0.773-0.775; less than 0.2% water; leaves no residue on evaporation. Lbs. per gal., 6.5. Produced by hydrogenating benzol. Uses—solvent for oils, fats, waxes, crude rubber, bitumen, and ethyl cellulose; degreasing solvent. The Barrett Co.

CYCLOHEXANE



Boiling range (5-95%), 80.3-81.1° C.; Sp. Gr., 25/25° C., .777; Freezing Point, >0° C.; Flash Point, <0° C.; Viscosity, 25° C., centipoises, 0.8. Infinitely soluble in acetone, benzene, CCl_4, ether. Insoluble in water. Uses—Solvent for nitro-cellulose and other resins. Intermediate in insecticide manufacture. Dow Chemical Co.

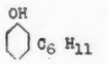
CYCLOHEXANOL

$C_6H_{12}O$. M.W. 100.15. Water-white (less than 20 Hazen) liquid, 95% distilling within 3.0° C.; BB.P., 158.162.0° C. Leaves no residue on evaporation, and has no acidity. Water content, less than 0.2%; Sp. Grav. at 25/4° C., 0.943-0.946. Flash point, approx. 68° C. Produced by hydrogenating phenol. **Used as a solvent** for many waxes, fats, oils, synthetic and natural resins; in the mfr. of soaps, lacquers, emulsion stabilizers, homogenizers and blending agents, plastics, polishes, etc. The Barrett Co.

CYCLOHEXANONE

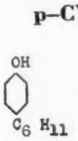
$C_6H_{10}O$. M.W. 98.14. Water-white (less than 20 Hazen) liquid, 95% distilling within 3.0° C.; B.P., 151.0-157.0° C. Leaves no residue on evaporation, and has no acidity. Water content, less than 0.2%; Sp. Gr. at 25/4° C., 0.941-0.945. Fl. P., approx. 47° C. Produced by incompletely hydrogenating phenol. Used as a solvent for cellulose esters and ethers, crude rubber, many oils, fats, waxes, natural and synthetic resins; used in mfr. lacquers, resins, enamels, inks, polishes, etc. The Barrett Co.

O-CYCLOHEXYL PHENOL



B.P., 10 mm. Hg., 148° C.; Sp. Gr., 60/25° C., 1.018; M.P., 47.3-55.5° C.; Flash point, 134° C.; Fire point, 150° C. Very slightly soluble in water, 75 g. in 100 g. CCl_4 at 25° C. Very soluble in acetone, benzene, ether, and methanol at 25° C. Use—Intermediate in the manufacture of insecticides. Dow Chemical Co.

p-CYCLOHEXYL PHENOL

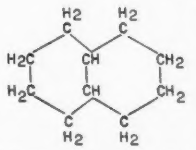


B.P., 10 mm. Hg, 166° C.; M.P., 129.2-131.4° C.; Solubility, g /100 g. solvent; Acetone, 25° C., 70; Benzene, 25° C., 4; CCl_4, 25° C., 2; Ether, 25° C., 40; Methanol, 25° C., 36; Water, 25° C., very slightly sol. Use—Possible intermediate in resin manufacture. Dow Chemical Co.

CYCLOSUL

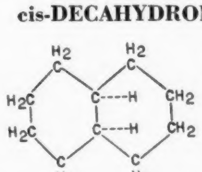
$(C_4H_7NO)_2SO_3$. Morpholine sulfite. White crystals very sol. in water. Slightly sol. in cold alcohols, very sol. in hot alcohols. Comparatively non-toxic. Use—anti-oxidant. Available in various size packages. Harris-Seybold-Potter Co.

DECAHYDRONAPHTHALENE (Decalin)



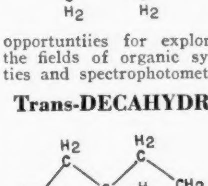
$C_{10}H_{18}$. M. W., 138.15; Sp. Gr., 20°/15.5° C., 0.869-0.896; Refractive Index, ND, 20° C., 1.4692-1.4809; Boiling range, 760 mm. 186-196° C.; Odor, musty. Isomers — A mixture of the cis- and trans- isomers. Solvency—A good solvent for a wide variety of materials. Uses—As a solvent in many types of industrial compositions, e. g., paints, enamels and polishes; in fumigants and for sludge removal; as a solvent or inert medium for various chemical reactions. The Barrett Co.

cis-DECAHYDRONAPHTHALENE



$C_{10}H_{18}$. M. W., 138.15. Sp. Gr., 20°/15.5° C., 0.8960; Refractive Index, ND, 20°C., 1,4809; B. P., 760mm., 195.6° C. Water-white liquid. Suggested uses — These cis- and trans- forms may afford interesting opportuntiies for exploratory investigations in the fields of organic syntheses, optical properties and spectrophotometry. The Barrett Co.

Trans-DECAHYDRONAPHTHALENE



$C_{10}H_{18}$. M. W., 138.15. Sp. Gr., 20°/15.5° C., 0.8693; Refractive Index, ND, 20° C., 1,4692; B.P. 760 mm., 186.9°C. Water-white liquid. Suggested uses—See cis-Decahydronaphthanene. The Barrett Co.

DEGREASER 124

Dark amber liquid, sol. oils and greases. Forms emulsions with cold water and when used with 6 parts kerosene, is an excellent agent for removing grease from motors, garage floors, etc. The Beacon Co.

DELTYL EXTRA

Odorless oil of vegetable origin. Will not turn rancid. Congeal. P., 3-4° C.; sp. gr. 0.852-0.854. No acidity. Sapon. val. 203-215. Sol. alcohol, mineral and vegetable oils. Uses—cosmetic penetrant; solvent for cholesterol. Givaudan-Delawanna, Inc.

DEREX

Insecticide concentrate, being a solution of derris, extractives in a, a-dimethyl-a'-carbobutoxydihydro-gamma-pyrone. Used in mfr. liquid contact insecticides for household and agricultural purposes. U. S. Industrial Chemicals, Inc.

DEVELOPED BRILLIANT GREEN 3G

When diazotized and developed with "National Developer Z," yields bright, yellowish-green shades of fair fastness to washing, very good fastness to stoving and acid spotting. Possesses excellent solubility, levels well. Suitable for use in all kinds of machines. Leaves acetate rayon affected unstained and discharges readily, particularly on rayon. National Aniline & Chemical Co., Inc.

DIALKYL PHOSPHATES

R_2HPO_4. Exemplified by diamyl hydrogen phosphate, and mixed esters such as octyl amyl hydrogen phosphate and butyl amyl hydrogen phosphate, these compounds are liquids which are sparingly soluble in water, and soluble in alcohol and vegetable oils. With increasing molecular weight, they become soluble in petroleum oils. Victor Chem. Works.

DIALLYL ETHER

$(CH_2{:}CH.CH_2)_2O$. Mol. Wt. 98.14. B.P. 95° C. Sp. Gr. 20/4° C. 0.805. Refr. Index 20° C. 1.417. Flash-Point ASTM o.c.° F. 20. Sol. in Water Wt. % at 20° C. 0.3. Responds to addition at double bond with halogens. Suggested uses—solvents, synthesis. Developed by Shell Development Co., Selling Agents, R. W. Greeff & Co., Inc.

2,4-DIAMYL CYCLOHEXANOL

2,4-Diamyl Cyclohexanol is an odorless water-white viscous liquid. The specific gravity at 30° C. is 0.911 and the Engler distillation range is 288.5-295.5° C. The Sharples Solvents Corp.

n-DIBUTYLAMINE

$(CH_3CH_2CH_2CH_2)_2NH$. Is a clear, water-white liquid with a characteristic ammoniacal odor. It is only partly soluble in water, but miscible with most organic solvents. Like butylamine it forms soaps of outstanding oil solubility. By suitably reacting dibutylamine, interesting derivatives which can serve as rubber vulcanizing accelerators, flotation reagents, emulsifying agents, insecticides, and corrosion inhibitors can be obtained. Sp. Gr. at 20/20° C., 0.7680; B. P., 159° C.; solubility in water at 20° C., 0.31% by wt.; solubility, water in, 6.1% by weight; lb. per gal. at 20° C., 6.15. Carbide and Carbon Chemicals Corp.

n-DI-BUTYLAMINO-ETHANOL

Pale straw-colored liquid, faint amine-like odor. Sp. Gr. at 20° C., 0.859; dist. range (Engler), 224-232° C. Of interest in mfr. of pharmaceutical and textile chemicals. Sharples Solvents Corp.

2,5-DICHLORACETOACETANILIDE

$CH_3COCH_2CONHC_6H_3Cl_2$. White, crystalline solid, M.P. about 96° C.; quite active chemically. Coupled with various aniline derivatives, a series of azo yellows known as Hansa colors are produced. These are not darkened by sulfur in the air, have high tinctorial power, possess improved working properties in printing inks. Carbide and Carbon Chemicals Corp.

2,4'DICHLOR DIPHENYL METHANE

$C_{13}H_{10}Cl_2$. Colorless mobile liquid. Mol. Wt. 237. B. P., 194-199° C. at 20 mm. Uses—

Dye intermediate, capacitor fluid, high boiling solvent. Packing—50-lb. cans and 500-lb. drums. Heyden Chemical Corp.

4,4'DICHLOR DIPHENYL METHANE

$C_{13}H_{10}Cl_2$. A white solid. Mol. Wt., 237. M. P., 50° C. Uses—Dye intermediate, capacitor fluid, high boiling solvent, plasticizer. Packing—100-lb. drums. Heyden Chemical Corp.

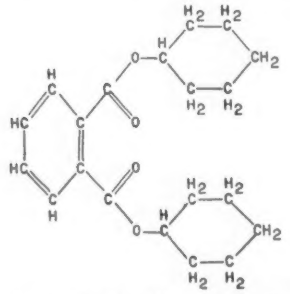
DICHLORISOPROPYL ETHER

$ClCH_2(CH_3)CHOCH(CH_3)CH_2Cl$. Colorless liquid B.P. 187.3° C. Miscible with practically all oils and organic solvents but immiscible with water. Good solvent and extractant for fats, waxes, and greases; may be used in paint and varnish removers, spotting agents, and cleaning solutions. Amines, nitriles, acids, and other products made chemically from it tend to be less water-soluble and more oil-soluble than those made from dichlorethyl ether because of the presence of 2 extra methyl groups. Carbide and Carbon Chemicals Corp.

2,6-DICHLORO-4-tert-AMYL PHENOL

White crystalline solid, strong aromatic odor. M.P. 55-65° C.; B.P. (15 mm.), 155-170° C. Sharples Solvents Corp.

DICYCLOHEXYL PHTHALATE



$C_{20}H_{26}O_4$. M. W., 330. White crystalline powder. M. P., 63-64° C. Insoluble in water. Odorless at room temperature. Suggested uses—Its properties make this material an outstanding plasticizer in printing inks, nitrocellulose lacquers and other types of coatings. Tests indicate excellent resistance to weathering. The Barrett Co.

DIETHYLAMINOETHANOL

$(C_2H_5)_2N(CH_2CH_2OH)$. Colorless, hygroscopic liquid, B.P. 162-1° C. Completely sol. in water, alcohol. Basic in character; readily furnishes water-soluble salts. Forms fatty acid derivatives which are textile softeners and emulsifiers in acid media. Being in the family of alkylolamines, it combines properties of amines and alcohols and yields derivatives containing tertiary amine groups. Carbide and Carbon Chemicals Corp.

DIETHYL "CARBITOL"

$(C_2H_5OC_2H_4)_2O$. Colorless, almost odorless liquid, B.P. 187.9° C. Slow evaporation rate and high solvent power for nitrocellulose and resins indicate its use as a high-boiler in brushing lacquers. Like Diethyl "Cellosolve," which it resembles in most properties, it is a powerful mutual solvent. Composed entirely of ether and hydrocarbon groups, it is chemically inert and makes an excellent high-boiling reaction medium. Carbide and Carbon Chemicals Corp.

DIETHYL "CELLOSOLVE"

$C_2H_5OCH_2CH_2OC_2H_5$. Colorless liquid with a slight ethereal odor. B.P. 121.4° C. Added to colloidal systems, such as detergents and wetting agents of limited water solubility, permits dilution with water without gelling or clouding. The combination of its ethyl and ether groups makes it a stable compound which can be used as an inert reaction medium. Carbide and Carbon Chemicals Corp.

DIETHYL DIAMMONIUM PYROPHOSPHATE

$[Et_2(NH_4)]_2P_4O_7$. Mol. wt. = 330. White, hygroscopic solid which softens with application of heat. Very soluble in water, giving neutral solutions. Suggested uses—Special fireproofing agent, humectant. Victor Chemical Works.

DI-2-ETHYL HEXYLAMINE (Dioctylamine)

$[C_4H_9CH(C_2H_5)CH_2]_2NH$. Has a high solubility in hydrocarbons and a low solubility in water. Its soaps formed by reaction with fatty acids are readily soluble in gasoline, paraffin oils, and alcohols. It is a solvent for various gums and resins. It is utilized in the synthesis of dyestuffs, insecticides, rubber accelerators, anti-oxidants, and emulsifying agents, and in dehydrogenating organic compounds. Sp. Gr. at 20/20° C., 0.8062; B. P., 281.1° C.; solubility in water, 0.02% by weight at 20° C solubility, water in, 0.17% by weight. Carbide and Carbon Chemicals Corp.

DIETHYLENE GLYCOL MONO STEARATE S 134

Yellow wax. Sp. Gr., 0.93. M. P., 42-43° C. Free fatty acid, less than 3%. Insoluble in water. Soluble hot in alcohol and most organic solvents and oils. Glyco Products Co., Inc.

DIETHYLENE GLYCOL PHTHALATE (DIGLYCOL PHTHALATE NEUTRAL)

Pale yellow viscous liquid resin. Sp. Gr., 1.25. Saponification value, 420-430. Insoluble in toluol and naphtha, but completely soluble in acetone. Glyco Products Co., Inc.

DIETHYLENE GLYCOL MONO PALMITATE S 140

Yellow wax. Sp. Gr., 0.93. M. P., 49° C. Free fatty acid, 7-8%. Dispersible in water. 3% dispersion in water has a pH of 9.3-9.5. Soluble hot in alcohol and most organic solvents and oils Glyco Products Co., Inc.

DIETHYLENE GLYCOL MONO OLEATE (A1418F)

Dark red oil. Sp. Gr., 0.96. Free fatty acid, less than 6%. Dispersible in water. 5% dispersion in water has a pH of 9.4-9.8. Soluble hot in alcohol and most organic solvents and oils. Glyco Products Co., Inc.

DIETHYLENE GLYCOL MONO MYRISTATE S 141

Yellow wax. Sp. Gr., 0.94. M. P., 40-41° C. Free fatty acid, about 5%. 3% dispersion in water has a pH of 8.5-8.8. Soluble hot in alcohol and most organic solvents. Glyco Products Co., Inc.

DIETHYLENE GLYCOL MONO-LAURATE (GLAURIN)

Yellow oil. Sp. Gr., 0.96. Free fatty acid, less than 3%. Titre, 17-18° C. Insoluble in water. Soluble in alcohol and most organic solvents and oils. Glyco Products Co., Inc.

DIETHYLENE GLYCOL DILAURATE S 235

Dark amber-colored oil. Sp. Gr., 0.92. Free fatty acid, less than 3%. Titre, 21-22° C. Insoluble in water. Soluble in alcohol and most organic solvents and oils. Glyco Products Co., Inc.

DIETHYLENE TRIAMINE

$NH_2CH_2CH_2NHCH_2CH_2NH_2$. Hygroscopic, somewhat viscous liquid; B.P. 206.7°C. Completely soluble in water and hydrocarbons. A strongly alkaline, high-boiling solvent for sulfur, acid gases, and various resins and dyes. It will react with acidic materials, such as fatty acids, to form soaps which dehydrate to amides. It has derivatives of interest to the rubber, resin, dye, and textile industries. Carbide and Carbon Chemicals Corp.

DIGLYCOL RICINOLEATE

Light-colored oily liquid; Freezing P., below 80° C. Sp. Gr., 0.980; sap. val., 156.5. Completely sol. in methanol, ethanol, acetone, ethyl acetate; in certain proportions, sol. in toluol, mineral spirits and mineral oil; insol. in water, Glyco Products Co., Inc.

DIISOBUTYL KETONE

$(CH_3)_2CHCH_2COCH_2CH(CH_3)_2$. Colorless liquid, miscible with most organic liquids. B.P. 168.1° C.; xylene dilution ratio, 1.5. Its excellent solvent power for rubber, nitrocellulose, and synthetic resins makes it a promising material for protective coatings where a stable, slow-evaporating solvent is desired. Its possibilities in syntheses should not be overlooked. Carbide and Carbon Chemicals Corp.

DIMETHALLYL ETHER

$[CH_2:(CH_3).CH_2]_2O$. Mol. Wt. 126.19. B.P. 134° C. Sp. Gr. 20/4° C. 0.816. Refr. Index 20° C. 1.428. Flash-Point ASTM o.c.° F. 23. Sol. in Water Wt. % at 20° C. 0.2. Responds to addition at double bond with halogens. Suggested uses—solvents, synthesis. Developed by Shell Development Co., Selling Agents, R. W. Greeff & Co., Inc.

DIMETHOXYTETRAGLYCOL

$(CH_3OC_2H_4OC_2H_4)_2O$. Stable, water-white liquid, B.P. 275.8° C. Is the dimethyl ether of tetraethylene glycol. Consists entirely of hydrocarbon and ether groups, completely sol. in water. Presence of 5 ether groups in its molecule indicates high solvent power. Its low volatility suggests its use as a plasticizer, while chemical inertness makes it suitable as a neutral reaction medium. Carbide and Carbon Chemicals Corp.

4 DIMETHYLAMINO 4'DIETHYLAMINO BENZOPHENONE

$C_{19}H_{24}ON_2$. Light Yellowish Gray Powder. Mol. Wt., 296. M. P., 93.5° C to 94° C. Uses—Organic Synthesis, dye intermediate. Packing—100-lb slack barrels or drums. Heyden Chemical Corp.

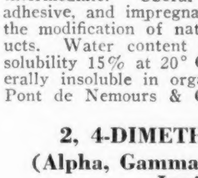
A, *A*-DIMETHYL-*A'*-CARBOBUTOXYDIHYDRO-GAMMA-PYRONE

$(CH_3)_2C{=}CH{-}CO{-}CH{=}C(OH)COOC_4H_9$. Used as a light-screen medium insecticide, and fungicide. Solvent for rotenone and derris root extractives. Used in formulation of insect-repellent cosmetic lotions and of concentrates for making liquid contact insecticides. U. S. Industrial Chemicals, Inc.

DIMETHYLOL UREA

$HOCH_2NHCONHCH_2OH$. A water soluble primary condensation product of urea and formaldehyde of particular interest as a resin intermediate. Useful in protective coating, adhesive, and impregnating compositions and in the modification of natural and synthetic products. Water content less than 11%. Water solubility 15% at 20° C., 45% at 50° C. Generally insoluble in organic solvents. E. I. du Pont de Nemours & Co., Inc.

2, 4-DIMETHYLPYRIDINE (Alpha, Gamma-Lutidine or 2, 4-Lutidine)



C_7H_9N. M. W., 107.08; Sp. Gr., 25°/4° C., 0.9293; Refractive Index, N_D, 25° C., 1.4981; B. P., 760 mm., 158.3° C.; Solubility in water at 25° C., 15%; Basicity, Ml N/1 HCl per gram, 9.35. Odor, strong, sweet resembling nitriles. Reactions—Chemical properties of this product resemble those of 2-Methylpyridine. It possesses two reactive methyl groups, one or both of which may enter into condensation or substitution reactions. Suggested uses—In the preparation of dyes and pharmaceuticals or in organic syntheses. The Barrett Co.

DINITRO-ORTHO-CRESOL

Bright yellow crystals or pellets. Freezing Point 83.5° C. Dinitro-ortho-cresol is useful as an intermediate in organic syntheses and as an insecticide when diluted with suitable carriers. A solution of the sodium salt is effective as a

dormant spray for fruit tree pests such as rosy aphid and bud moth. E. I. du Pont de Nemours & Co., Inc.

DIPENTAERYTHRITOL HEXA ACETATE

$(CH_3COOCH_2)_3$ $C.CH_2OCH_2.C$ $(CH_2OOCCH_3)_3$. Waxy, white to light amber in color. M. P. 70-75° C. Compatible with many resins showing plasticizing properties. Heyden Chemical Corp.

DIPENTAERYTHRITOL HEXA BUTYRATE

$(CH_3CH_2CH_2COOCH_2)_3CCH_2OCH_2C(CH_2OOCCH_2CH_2CH_3)_3$. Light amber oil freezing at 15-20° C. and with no known boiling point. Compatible with many resins among which might be mentioned urea lacquer type resin, up to 25%. It is not compatible with cellulose acetate. Heyden Chemical Corp.

DIPENTAERYTHRITOL HEXA PROPIONATE

$(CH_3CH_2COOCH_2)_3CCH_2OCH_2C(CH_2OOCCH_2CH_3)_3$. Light amber oil. B. P., 240-250° C. at 2 mm. Compatible with many resins showing plasticizing properties. Heyden Chemical Corp.

DIPHENYL CARBONATE

$(C_6H_5)_2CO_3$. M. W. 214. White crystalline solid. M.P. 78° C. B.P. 302° C.; 168° C. (15MM). Insoluble in water, soluble in hot alcohol, ether, acetic acid, acetone, and most aromatic solvents. Volatility of 22.0% compared with 100% for camphor. Highly compatible with cellulose acetate, effecting ready solution to form a very clear and uniform plastic comparable to that formed with camphor. It is similarly recommended for ethyl cellulose plastic. Forming odorless and less combustible plastic with nitro cellulose, it lends itself for substitution of up to 50% of the camphor content of such plastics. General Chemical Company.

DIPROPYLENE GLYCOL

$(CH_3CHOHCH_2)_2O$. Colorless, slightly viscous liquid having a higher B.P. (231.8° C.) than propylene glycol. Of interest for those applications where a less volatile glycol is desirable. Completely soluble in water, toluol (but not gasoline); solvent for nitrocellulose, shellac, and partial solvent for cellulose acetate. Owing to its ether linkage, is a more active solvent than propylene glyco. As a high-boiling, odorless coupling agent or mutual solvent for normally immiscible liquid systems, is distinctly superior to the corresponding ethylene compound. Adsorbs moisture from the air, but has only half the hygroscopicity of diethylene glycol. Carbide and Carbon Chemicals Corp.

DI-TERT-AMYL ANILINE

Di-tert-Amyl Aniline is a practically odorless red liquid. The specific gravity at 20° C. is .923 and the Engler distillation range is 289-321° C. The Sharples Solvents Corp.

DU PONT RUBBER YELLOW G

New yellow color for rubber which has exceptional brilliance, cleanliness and light-fastness. More nearly a neutral yellow than any other available, being practically free from any red or green undertone. In addition, has exceptional color strength which makes it an economical pigment to use. E. I. du Pont de Nemours & Co. (Inc.).

DP-477 DUST COLLECTING LIQUID

Aqueous solution of synthetic viscous oily material which possesses good dust wetting and adhesive characteristics. Non-inflammable. Sp. Gr. 1.2386 at 60° F. Will impart flameproof characteristics to paper, textile and fibrous materials. Used as a dust-collecting liquid in air filters. E. I. du Pont de Nemours & Co.

EMULSIFYING BASE #821

Detergent and emulsifying agent in paste form. Equally effective in neutral, acid or alkaline solutions; not subject to hydrolysis; shows considerable stability in the presence of most metallic salts. May be used in combination with superfatted or alkaline soaps, or by itself. The Beacon Co.

EMULSOL H. C. P.

Liquid mixture of polyglycols, miscible with oils. Freely dispersible in aqueous media. Has many interesting surface tension depressing, emulsifying, and wetting-out properties. The Emulsol Corp.

EMULSOL K-480

Surface tension depressant. Has several unique properties. Very effective in the differential froth flotation of KCl out of KCl-NaCl mixtures. The Emulsol Corp.

EMULSOL 346

Fine, crystalline material, consisting of sulfoacetic acid derivatives. Has unique interface-modifying properties and pronounced wetting-out, detergent and emulsifying powers. Uses—cosmetics, toilet preparations, textile processing, fine fabric washing. The Emulsol Corp.

EMULSOL 903-L

Dark-colored liquid. Active surface tension depressant and frother. Used as cationic agent in froth flotation of minerals. The Emulsol Corp.

EMULSOL 1150-CA

Waxy solid, freely dispersible in oil and aqueous media. Imparts extraordinary stability to oil and water emulsions. Uses—mfr. cosmetics; textile processing, etc. The Emulsol Corp.

EMULSOL X-1

This is an amber-colored liquid, soluble in oils, freely dispersible in water and aqueous media. It has pronounced wetting out, detergent and emulsifying properties. Uses—textile processing, insecticides, as a flotation agent in the mining industry, particularly in the flotation of tungsten ores. The Emulsol Corp.

EMULSTEROLENE

Brown, wax-like solid, M.P. 53° C. Dispersible in hot water. Sol. organic solvents. Finds use as a thickening and emulsifying agent. The Beacon Co.

EMULSTRENE

Light buff, wax-like solid, M.P. 48° C. Dispersible in hot and cold water. Sol. organic solvents. A very fine thickening and emulsifying agent. The Beacon Co.

EPICHLOROHYDRIN

$CH_2Cl.CH.CH_2$ (with O bridging CH and CH_2). Mol. Wt. 92.53. B.P. 116° C. Sp. Gr. 20/4° C. 1.181. Refr. Index 20° C. 1.438. Flash Point ASTM o.c.° F. 90. Sol. in Water Wt. % at 20° C. 6. Highly reactive to addition at expoxide group and subsequent replacement of the chlorine atom. Suggested uses—Synthesis of plasticizers, solvents, resins, and pharmaceutical and industrial chemicals. Developed by Shell Development Co., Selling Agents, R. W. Greeff & Co., Inc.

ERIE BLACK CW

A direct dye, possessing three properties of particular interest in hosiery dyeing, namely; 1. It is a non-bronzing black. 2. It yields excellent unions on cotton and rayon. 3. It leaves acetate rayon practically clear. In additional National Erie Black CW is easily soluble, levels well and can be discharged to a good white. It possesses fair fastness to washing and light and good fastness to perspiration. National Aniline & Chemical Co.

ERIE BRILLIANT BROWN S

A direct dye particularly valuable for dyeing hosiery containing acetate rayon effect threads. Yields cutch brown shades of good fastness to acids and alkalies and very good fastness to perspiration. National Aniline & Chemical Co.

ERIE BRILLIANT GREEN VB

A bright bluish-green of good fastness to light. Although applicable to cotton, rayon, pure or tin-weighted silk, it is of particular interest where Barré rayon is encountered. Acetate rayon effects are left practically clear. National Aniline & Chemical Co.

ERUSTOLAX

A mixture of soluble oils with solvents which lowers surface tension in water solutions. Used in the laundry and dry cleaning industry as a pre-spotter or solvent for body greases present in soiled clothes. Through its use shortened wash formulas are frequently possible. Pennsylvania Salt Mfg. Co.

ERUSTOCIDE

A fluorine base sour, the most soluble of this group of sours. Possesses definite germicidal and color-setting properties. Used in the laundry to impart lustre and softer finish on flatwork. It is also used in conjunction with synthetic soaps for fabrics that must be washed in an acid medium. Pennsylvania Salt Mfg. Co.

ERUSTO SALTS REGULAR

A very soluble fluorine base sour exceptionally high in neutralizing value. Used in the laundry industry as a neutralizer of residual alkali and helps materially in giving washed clothes clear, bright and fresher look. Pennsylvania Salt Mfg. Co.

ERUSTO SALTS SPECIAL

A fluorine base sour exceptionally high in rust removing properties. Due to its peculiar snowball-like crystalline structure, it is much more soluble than other rust removing sours. Used as a laundry sour. Pennsylvania Salt Mfg. Co.

"ES-MIN-EL"

A mixture of essential mineral elements, consisting of manganese sulfate, copper sulfate, zinc sulfate, iron sulfate, boron, etc. It is made particularly for use with fertilizers to produce better and larger crops, particularly where the soils are deficient in minerals. Tennessee Corp.

ESTER GUM DISPERSION OF CARBON BLACK

Developed as a general purpose product for the paint industry. This product represents a very flexible proposition and can be used in general paint formulation. United Carbon Company, Inc.

2-ETHYL BUTYRALDEHYDE

$(C_2H_5)_2CHCHO$. Also known as diethyl acetaldehyde. Water-insoluble, colorless liquid, B.P. 116.8° C. Shows particular promise in preparation of certain pharmaceuticals, rubber accelerators, and synthetic resins. Can be used in the synthesis of nitriles, hydroxy acids, acetals, and a host of other organic products. Carbide and Carbon Chemicals Corp.

ETHYL CYANOACETATE

CH_2 CN.COO.C_2H_5. Properties, Boiling range, (5-95%), 205.3-209.1° C.; Sp. Gr. 25/25° C., 1.059; Freezing point, less than —20° C. Flash point, 104° C. Viscosity at 25° C., 2.4 centipoises. Solubility, 25° C. Infinitely soluble in acetone, alcohol, benzene, CCl_4, ether, 2 g. in 100 g. water. Use—Intermediate in the preparation of a number of pharmaceutical and general organic products. Dow Chemical Co.

ETHYL DIETHANOLAMINE

Ethyl Diethanolamine is a water-white liquid with an amine-like odor. The specific gravity at 20° C. is 1.015 and the Engler distillation range is 246-252° C. The Sharples Solvents Corp.

2-ETHYLHEXYLAMINE

(Octylamine)

$C_4H_9CH(C_2H_5)CH_2NH_2$. Has high solubility in hydrocarbons and a low solubility in water. Its soaps formed by reaction with fatty acids are readily soluble in gasoline, paraffin oils, and alcohols. It dissolves various gums and resins. It is useful in synthesizing dyestuffs, insecticides, rubber accelerators, anti-oxidants, emulsifying agents, and flotation collectors. Sp. Gr. at 20/20° C., 0.7385; B.P. 167.5° C. Carbide and Carbon Chemicals Corp.

ETHYL MONOETHANOLAMINE

Ethyl Monoethanolamine is a water-white liquid possessing an amine-like odor. The specific gravity at 20° C. is 0.914 and the Engler distillation range is 160-167° C. The Sharples Solvents Corp.

ETHYL PHENYL ETHANOLAMINE

$C_6H_5N(C_2H_5)CH_2CH_2OH$. Azo dyestuffs can be obtained by coupling it with various diazo compounds. Undergoes characteristic reactions of a tertiary amine and is being investigated for other intermediate uses. Light-colored solid, M.P. 42° C. Carbide and Carbon Chemicals Corp.

2-ETHYL-3-PROPYLACROLEIN

$CH_3CH_2CH_2CH{=}C(C_2H_5)CHO$. Yellow liquid, B.P. 175.0° C. Has powerful odor, which suggests its use in warning agents, insecticides, and leak detectors. Occasionally referred to as 2-ethylhexenal, this unsaturated octaldehyde contains a reactive double bond and may be used as an intermediate in many syntheses. Carbide and Carbon Chemicals Corp.

ETHYL SODIUM POTASSIUM PHOSPHATE

Used in 60% water solution as wool spinning lubricant. Superior to olive oil for this purpose, readily rinsing out with water. Fibers lubricated with this solution are good conductors, static being eliminated. The 60% solution has sp. gr. of 1.37, and pH of 7.0-7.4. Lbs. per gal., 11.4, Merrimac Division, Monsanto Chem. Co.

ETHYL TRIETHANOLAMINE PHOSPHATE

60% Soln. in water. Approx. Chem. constitution $[(C_2H_5)_3N]_2\ (C_2H_5)PO_4$ and $[(C_2H_5)_3N]\ (C_2H_5)_2\ PO_4$. Light straw color. Slight ester odor. Sp. Gr. 1.19. pH of 60% soln. 7.0-7.4. Suggested uses—Spinning agent, humectant. Container—55 gal. non-returnable drum. Monsanto Chemical Co.

ETHYLENE GLYCOL MONO STEARATE S 151

Tan, wax-like material. Sp. Gr. ,0.96. M. P., 59-61° C. Free fatty acid, less than 3%. Insoluble in water. Soluble hot in alcohol and organic solvents and oils. Glyco Products Co., Inc.

ETHYLENE GLYCOL MONO LAURATE S 147

Dark red oil. Sp. Gr., 0.93. Free fatty acid, less than 5%. Titre, 28-30° C. Insoluble in water. Soluble in toluol and most organic solvents. Glyco Products Co., Inc.

EXCELSIOR BEADS

Represent the application of pellet form to a carbon black of good color and strength in a low cost range. Outstanding factors are cleanliness, ease of handling, and reduction of ball mill grinding time. Find ready application in all kinds of paint and industrial coatings. Binney & Smith Co.

FALBA

An oxycholesterin concentrate; practically odorless and greaseless; easily perfumed; absorbs 5 times its weight of aqueous media. Stable to acid and alkali; non-smearing lubricant and emollient. Forms colloidal water-in-oil emulsions. Pfaltz & Bauer, Inc.

FAST LIGHT RUBINE BL

Acid red of outstanding fastness to light. Provides a companion product to "Fast Light Yellow 2G" and "Alizarine Sapphire" for carpet yarns and ladies' dress goods where combination shades of superior light fastness are required. Readily soluble, levels well; produces a bluish shade of red. National Aniline & Chemical Co., Inc.

FAST PRINTING BLUE RB

Possesses the same excellent solubility and keeping qual'ties as "Fast Printing Yellow G," with the added advantage of even better light fastness. National Aniline & Chemical Co., Inc.

FAST PRINTING GREEN G

A companion product to "Fast Printing Blue RB," possessing the same excellent fastness to light and solubility in neutral or alkaline printing paste. National Aniline & Chemical Co., Inc.

FAST PRINTING YELLOW G

Printing color of good light fastness particularly intended for printing wool, although it can also be used for pure or tin-weighted silk. Possesses excellent solubility in either acid or neutral printing paste; shows relatively little tendency to thicken up or scum over on standing. National Aniline & Chemical Co., Inc.

FENCHONE

$C_{10}H_{16}O$. Decyclic ketone, an isomer of camphor. Camphor-like odor; sp. gr. at 15/4° C., 0.9457; refr. ind. at 20° C., 1.4625; optical rot., + 7.4. B.P., 191.0° C. Uses—plasticizer for cellulose esters; solvent for resins, miscible with all types of solvents. Newport Industries, Inc.

FIRE RETARDANT "CM"

A flameproofing composition based on Ammonium Sulfamate, useful for treatment of textiles, paper and insulation products. The material is readily soluble in water and is applied in solution form by immersion, spraying or brushing methods. Flameproofed articles will not develop efflorescence on storage and the treatment is completely free from stiffening action. E. I. du Pont de Nemours & Co., Inc.

FERRI-FLOC

A cold water-sol. ferric sulfate made especially for sewage disposal, industrial waste waters, and other types of water treatment. Tennessee Corp.

FERRISUL

Anhydrous ferric sulfate. Globular, free-flowing form, pale brown color. Readily sol. hot water; moderately sol. cold water Uses—in conjunction with hydrofluoric acid, used for pickling stainless steel to remove the scale formed during heat-treatment. Attack on metal beneath the scale is reduced to a minimum, with no appreciable quantities of fumes from the pickling bath. Cont.—moisture-proof bags, 175 lbs.; steel drums, 400 lbs.; slack bbls., 425 lbs. (all wts. net). Merrimac Division, Monsanto Chem. Co.

FLEXO WAX C

Non-crystalline, tan-colored, dull wax; M. P., 63-74° C. (Ball and Ring). Cold flow, 63-65.5°C. Insol. in water, sol. in hot hydrocarbons. A waterproof, amorphous wax, it can be made to flow in thin layers on paper and cloth. Uses—adhesive for cellophane, cellulose acetate, and other materials; mfr. textile and leather finishes, polishes, buffing compounds, etc. Glyco Products Co., Inc.

"FLEXOL" PLASTICIZER 3G O

$C_7H_{15}COOC_2H_4(OC_2H_4)_2OOCC_7H_{15}$. The di-2-ethylhexoate of triethylene glycol; a new liquid; B.P. 215° C. at 15 mm. Hg. Has a very low vapor pressure and water solubility and possesses a great resistance to discoloration by ultra-violet light. Interesting as a softening agent for cellulose esters and ethers, as well as synthetic resins because it increases the elasticity of the product without unduly reducing the ultimate strength. Has extraordinary property of increasing flexibility of nitrocellulose as temperature is lowered from 30° to 10°C. Carbide and Carbon Chemicals Corp.

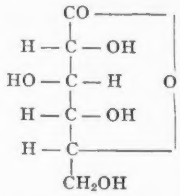
G. F. FINISH

A tung oil-synthetic resin varnish blended with small amounts of SEALACELL W. Used over SEALACELL W and VARNOWAX as a final coat, yielding a durable satin finish resistant to water, soaps, and stains. Also used as polish and restorer for old varnish, enamel, etc. Cont.—quarts, gals., and 5 gals. General Finishes, Inc.

GALEX

A rosin made stable by dehydrogenation. Recommended where rosin hsa been indicated but could not be used previously because of its tendency to oxidize and deteriorate. Compatible with most organic solvents. Forms a crystalline mono-sulfonate with sulfuric acid. Yields crystalline alkaline salts, stable esters of mono and polybasic alcohols. Recommended as modifier for synthetics, adhesives, electric insulating compounds, high grade paper size and coatings, rubber cements, ester gum. Typical analysis: M. P., 62-65° C. (Ball & Ring), Acid No., 155-158. Oxygen absorption, less than 1% of that of rosin. G. & A. Laboratories, Inc.

GLUCONO DELTA LACTONE



Glucono delta lactone, a purified anhydride of gluconic acid, is a white crystalline powder. It is non-hygroscopic, neutral in reaction and stable in storage. It has a sweet taste which slowly becomes acid after contact with water. It reacts with aqueous solutions of alkaline substances to form gluconates, but does not completely react with water alone; in solution it forms an equilibrium mixture of acid and lactone. Chas. Pfizer & Co., Inc.

GLYCEROL a-MONOCHLOROHYDRIN

$CH_2OH.CHOH.CH_2Cl$. Mol. Wt. 110.54. B.P. 213° C. Sp. Gr. 20/4° C. 1.320. Refr. Index 20° C. 1.481. Flash-Point ASTM o.c.° F. 280. Sol. in Water Wt. % at 20° C. ∞. Highly reactive due to presence of an adjacent hydroxyl group and chlorine atom. Suggested uses—Synthesis of plasticizers, solvents, resins, and pharmaceutical and industrial chemicals. Developed by Shell Development Co., Selling Agents, R. W. Greeff & Co., Inc.

GLYCEROL DICHLOROHYDRINS (Mixture)

2/3 $CH_2Cl.CHCl.CH_2OH.$, 1/3 $CH_2Cl.CH(OH).CH_2Cl$. Mol. Wt. 128.99. B. P. 182° C. Sp. Gr. 20/4° C. 1.362. Refr. Index 20° C. 1.485. Flash-Point ASTM o.c.° F. 200. Sol. in Water Wt. % at 20° C. 13. Highly reactive due to presence of an adjacent hydroxyl group and chlorine atom. Suggested uses—Synthesis of plasticizers, solvents, resins, and pharmaceutical and industrial chemicals. Developed by Shell Development Co., Selling Agents, R. W. Greeff & Co., Inc.

GLYCEROL 1, 3-DICHLOROHYDRIN

$CH_2Cl.CHOH.CH_2Cl$. Mol. Wt. 128.99. B.P. •175° C. Sp. Gr. 20/4° C. 1.365. Refr. Index 20° C. 1.484. Flash-Point ASTM o.c.° F. 200. Sol. in Water Wt. % at 20.° C. 15.5. Highly reactive due to presence of an adjacent hydroxyl group and chlorine atom. Suggested uses—Synthesis of plasticizers, solvents, resins, and pharmaceutical and industrial chemicals. Developed by Shell Development Co., Selling Agents, R. W. Greeff & Co., Inc.

GLYCERYL CITRATE S 129

Soft, yellow resin. Sp. Gr., 1.32. 5% dispersion in water has a pH of 2. Soluble in water. Soluble hot in alcohol. Insoluble in most organic solvents and oils. Glyco Products Co., Inc.

GLYCERYL MONO MYRISTATE S 127

Tan-colored wax. Sp. Gr., 0.96. M. P., 49-50° C. Free fatty acid, 1.5%. Dispersible in water. 3% dispersion in water has a pH of 7.6. Soluble hot in alcohol and most organic solvenths and oils. Glyco Products Co., Inc.

GLYCERYL MONO LAURATE (GLYCERYL LAURATE S)

Semi-solid, cream-colored paste. Sp. Gr., 0.98. Free fatty acid, less than 2.5%. Dispersible in water. 5% dispersion in water has a pH of 8.5-8.7. Soluble in alcohol and most organic solvents and oils. Glyco Products Co., Inc.

GLYCERYL MONO OLEATE (GLYCERYL OLEATE EDIBLE)

Yellow oil. Sp. Gr., 0.94. Free fatty acid, less than 2%. Dispersible in water 5% dispersion in water has a pH of 8.3-8.5. Titre, 0° C. Soluble in alcohol and most organic solvents and oils. Glyco Products Co., Inc.

GLYCERYL MONOSTEARATE

White wax dispersible in water. Contains no free alkalies or amines. 5% dispersion in water has a pH of 8.5. Finds use in various emulsions and, particularly, cosmetics. The Beacon Co.

GLYCERYL RICINOLEATE

Light amber, self-emulsifying oil, forming milky emulsions with cold water. Miscible with alcohols, hydrocarbons, solvents, and oils. The Beacon Co.

GLYCERYL TARTRATE S 130

Amber-colored soft resin.. Sp. Gr., 1.47. 5% dispersion in water has a pH of 2.15. Soluble in water. Insoluble in alcohol and most organic solvents and oils. Glyco Products Co., Inc.

GLYCOL DIACETATE

$CH_3COOCH_2CH_2OOCCH_3$. Water-white liquid, B.P. 190.5° C. Uses—solvent for cellulose esters and ethers, for printing inks and lacquers; prevents blushing in airplane dopes; imparts suppleness to cellulose ether films; solvent for resins; perfume fixative; plasticizer for ethyl and benzyl cellulose that does not discolor. Carbide and Carbon Chemicals Corp.

GLYCOL DIFORMATE

(Ethylene Glycol Diformate)

$HCOOCH_2CH_2OOCH$. As supplied commercially is a mild-odored, water-white liquid, soluble in water, alcohol, and ether. This ester boils at 177° C. under 760 mm. pressure and has a specific gravity of 1.2240 at 20/20° C. Like glycol diacetate, it is a solvent for cellulose acetate, nitrocellulose, and cellulose ethers. In the presence of water, glycol diformate will hydrolyze slowly with the liberation of formic acid. Hence, it can be employed in reactions where it is desired to develop a gradual source of this acid. It shows promise as an ingredient of embalming fluids. Carbide and Carbon Chemicals Corp.

GLYCOL RICINOLEATE

Light amber self-emulsifying oil which forms milky emulsions with cold water. Readily miscible with alcohols, hydrocarbons, solvents, and oils. The Beacon Co.

GREASOLVE

Dark amber, gel-like paste, sol. oils and greases. Forms emulsions with cold water, especially useful in cleaning motors, garage floors, etc. The Beacon Co.

GUANIDINE CARBONATE

$(NH_2.CNH.NH_2)_2H_2CO_3$. M. W. 180.17. White granules, 100% through 40 mesh, with slightly ammoniacal odor. Dec. at 197-199° C., without melting. Sol. water; ethanol, methanol, acetone—very slightly sol. at 24° C. Stable on long storage. Acids decompose the carbonate, forming the corresponding guanidine salt. Alkalies, no effect, unless an insoluble carbonate is formed, with release of free guanidine. Use—as an organic alkali. American Cyanamid & Chem. Corp.

GUANYLUREA SULFATE

$(NH_2 . CNH . NH . CO . NH_2)_2 . H_2SO_4 . 2H_2O$. M. W. 338.3. White, odorless powder. Softens at 193-195°C. Sol. water, alcohol; insol. ether. Stable on long storage. Acids have no effect, nor do alkalies, except those precipitating an insol. sulfate to leave guanylurea in solution. Use—as an organic alkali. American Cyanamid & Chem. Corp.

GUM ARABIC, REFINED

A high purity white, soluble gum arabic. Available in one pound and five pound packages. Harris-Seybold-Potter Co.

HEAT TRANSFER SALT

A mixture of sodium and potassium nitrates and nitrites. M.P. approx. 145° C. "HTS." is thermally stable at 900° F. and under special conditions at even higher temperatures. The molten salt can be pumped at atmospheric pressure as readily as water. Large quantities are used for heat transfer and temperature control in some processes operating at 500-1000° F. E. I. du Pont de Nemours & Co., Inc.

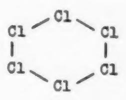
HEPTADECANOL

$C_4H_9CH(C_2H_5)C_2H_4CH(OH)C_2H_4CH(C_2H_5)2$. Or 3,9-diethyltridecanol-6. New synthetic, secondary, branched-china alcohol of 17 carbon atoms, comparable in molecular size to those alcohols derived from such naturally occurring materials as vegetable and animal fats and waxes. B.P. 308.5° C. Sp, Gr. 0.8475; M.W. 256.5. As a synthetic intermediate, interesting for the manufacture of plasticizers, perfume esters, cosmetic bases, dyestuffs, wetting agents, detergents, flotation agents, insecticides, and certain pharmaceuticals In general, it serves as a useful intermediate for the introduction of alkyl groups of high molecular weight into other compounds. Carbide and Carbon Chems. Corp.

HERCOSETT

Hercules' tradename for emulsions of ethyl cellulose, and solutions from which these emulsions may be made, suitable for developing durable finishes on textiles. Hercosett finishes are noteworthy in that they are more easily prepared and applied than ordinary starch finishes, since no heating is required. Due to their thermoplastic properties, the finishes produced are readily regenerated by ironing. Finshes are crystal-clear and indifferent to sunlight, enhancing color value and brightness of dyed or printed fabrics. Combined with required amount of direct color, these emulsions can be used to dye and finish in one operation. The fastness to washing is in general superior to that of fabrics dyed in the conventional dye-bath. Any degree of finish, from very stiff to soft, can be obtained. Hercules Powder Co.

HEXACHLOR BENZENE



Mol. Wt. 284.8; M.P. 229.9-230.6° C. Insoluble in water and alcohol at 25° C. Very slightly soluble in ether, slightly soluble in benzene, and soluble in CCl_4, at 25° C. Dow Chemical Co.

HEXAETHYLENE GLYCOL

$HOCH_2(CH_2OCH_2)_5CH_2OH$. Has a rather high boiling point, an extremely low vapor pressure, and is completely soluble in water and many organic solvents, including benzol and toluol, but is insoluble in aliphatic hydrocarbons. It is used as a plasticizer for casein and gelatin compositions, glues, cork, and special printing inks; and as an intermediate in the synthesis of alkyd-type resins. Carbide and Carbon Chemicals Corp.

n-HEXALDEHYDE

$CH_3(CH_2)_4CHO$. Colorless liquid possessing a sharp, aldehyde odor. B.P. 128.6° C. The 6 carbon atoms in a straight chain are of interest in many syntheses. Substitution reactions with halogens, reduction with hydrogen, together with other typical aldehyde reactions, make it a valuable starting point in the manufacture of plasticizers, rubber chemicals, dyes, synthetic resins, and insecticides. Carbide and Carbon Chemicals Corp.

n-HEXYL ETHER

$C_6H_{13}OC_6H_{13}$. Is a stable, mild-odored, high-boiling liquid that is much less volatile than the lower aliphatic ethers. Its solubility in water is exceedingly low. It is used as an inert, anhydrous reaction medium and as a component of foam breakers. Sp. Gr. at 20/20° C., 0.7940 to 0.7990; boiling range, 180° C. to 235° C. (d) available in 1 gal. cans, and in 5-gal. and 45-gal. drums. Carbide and Carbon Chemicals Corp.

HYDROTEX

High concentration, one-bath waterproofing paraffin emulsion. Stable to acids, salts and electrolytes—not affected by hard water. Dilutable with cold water. Contains no soaps or esters. Uses—waterproofing of textiles of all kinds, paper, cardboard, leather, etc., in one-bath processes. The Beacon Co.

HYDROXYETHYL ETHYLENE DIAMINE

$NH_2CH_2CH_2NHCH_2CH_2OH$. Hygroscopic liquid of medium visc. and mildly ammoniacal odor; B. P. 243.7°C. Compound embodies the reactivity of alcohols, primary amines, and secondary amines. Its properties combine the ethanolamine and ethylene amine families, and chemically it is similar to diethylene triamine. Producers of textile compounds, dyestuffs, resins, rubber products, insecticides, and certain medicinals will find it a novel raw material. Carbide and Carbon Chemicals Corp.

HYDROXYLAMMONIUM ACID SULFATE

$NH_2OH.H_2SO_4$. As produced, this material is a soft crystalline mass of brownish color. It may be used for the preparation of other hydroxylammonium salts and can also be reacted with aldehydes and ketones to form aldoximes and ketoximes. Commercial Solvents Corp.

HYDROXYLAMMONIUM SULFATE (97.5% Plus)

$(NH_2OH)_2.H_2SO_4$. This salt, which is of high purity, may be used as a reducing agent; the salt can also be reacted with carbonyl compounds, esters, quinones, and the ethylene linkage in unsaturated acids and ketones. Commercial Solvents Corp.

INDOSOIL

Mixture of fatty and rosin acids containing phytosterols made from "Liqro" by vacuum distillation. Actual composition not well established. Serves as substitute for Red Oil and other fatty acids in textile oils and soaps, soluble oils, flotation reagents, greases, liquid soaps, polishes, and other soap products. Reacts with glycerol and other polyhydric alcohols forming esters used for paint oils. Industrial Chemical Sales Div., W. Va. Pulp and Paper Co.

ISOBUTYL UNDECYLENAMIDE

$C_{10}H_{19}CONHC_4H_9$. Non-volatile, synthetic organic chemical. Exhibits unusual characteristics as an ingredient of household fly spray. Chemically stable. Extensive tests have shown that it is not harmful to warm-blooded animals. When used with pyrethrum extract, compositions containing it exhibit greater fly-spray efficiency than compositions containing pyrethrum alone. E. I. du Pont de Nemours & Co. (Inc.).

ISOBUTYLENE CHLOROHYDRIN

$CH_3COH(CH_3).CH_2Cl$. Mol. Wt. 108.57. B.P. 127° C. Sp. Gr. 20/4° C. 1.061. Refr. Index 20° C. 1.439. Flash-Point ASTM o.c.° F. 110. Sol. in Water Wt. % at 20° C. 15.7. Highly reactive due to presence of an adjacent hydroxyl group and chlorine atom. Suggested uses—Synthesis of plasticizers, solvents, resins, and pharmaceutical and industrial chemicals. Developed by Shell Development Co., Selling Agents, R. W. Greeff & Co., Inc.

ISOBUTYLENE OXIDE

$CH_3.C(CH_3).CH_2$ (with O bridging). Mol. Wt. 72.06. B.P. 52° C. Sp. Gr. 20/4° C. 0.805. Refr. Index 20° C. 1.372. Flash-Point ASTM o.c.° F. —20 (cl.). Sol. in Water Wt. % at 20° C. 5.5. Reactive by virtue of the epoxide group to alcohols, acids, amines, water, etc., containing a reactive hydrogen atom. Suggested uses—Synthesis. Developed by Shell Development Co., Selling Agents, R. W. Greeff & Co., Inc.

ISCO REFINED WAX #352

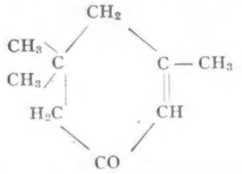
Placed on the market as a Carnauba Wax Substitute. It is packed in bags weighing about 150 pounds each in the Flake form. It has a melting point of approximately 170-180° F. Acid Number 3.9. Ester Number 64.3. Its analysis and characteristics are very similar to Carnauba Wax. Innis, Speiden & Co.

ISOCROTYL CHLORIDE

$CH_3.C(CH_3):CHCl$. Mol. Wt. 90.56. B.P. 68° C. Sp. Gr. 20/4° C. 0.919. Refr. Index 20° C. 1.422. Flash-Point ASTM o.c.° F. 35. Sol. in Water Wt. % at 20° C. Less than 0.1. Very stable to hydrolysis due to vinyl structure. Readily halogenated at double bond. Suggested uses—Cleaning and degreasing solvents, synthesis. Developed by Shell Development Co., Selling Agents, R. W. Greeff & Co., Inc.

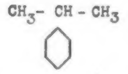
ISOPHORONE

(3, 5, 5-trimethylcyclohexene-2-one-1)



Is a stable, high-boiling, slow evaporating, cyclic ketone, and an excellent solvent for oils, waxes, gums, resins, and cellulose derivatives. It has one of the highest-known dilution ratios for nitrocellulose—6.2 with toluol and 5.1 with xylol. Solutions of nitrocellulose containing 75% solids can be made at room temperature. As a solvent for "Vinylite" resins it is used in printing inks, stencil pastes, and roll-coating finishes. Sp. Gr. at 20/20° C., 0.9710 to 0.9760; boiling range, 205 to 220° C.; available in 1 gal. cans, and in 5-gal. and 55-gal. drums. Carbide and Carbon Chemicals Corp.

ISO–PROPYL BENZENE



Boiling range (5-95%), 152-153° C.; Sp. Gr., 25/25° C., 0.861; Freezing point, <—70° C.; Flash point, 36° C.; Viscosity 25° C., 0.7 centipoises; Dielectric strength, volts at 0.1" gap, 21,000. Infinitely soluble in alcohol, benzene, carbon tetrachloride, and ether. Insoluble in water. Use—Intermediate in the manufacture of aromatics. Dow Chemical Co.

ISO–PROPYL BROMIDE

$CH_3CHBr.CH_3$. Boiling range (5-95%), 58.5-60.5° C. Sp. Gr., 25/25° C., 1.304; Freezing point, —90° C.; Refractive index, 25° C., 1.422; Viscosity, 25° C, centipoises, 0.5. Soluability, at 25° C., Infinitely soluble in acetone, alcohol, benzene, CCl_4, ether. Slightly soluble in water. Use—Intermediate in preparation of number of pharmaceutical materials, and for introduction of the iso-propyl group. Dow Chemical Co.

JAPAN WAX (#525) SUBSTITUTE

This Molding Wax #525, Japan Wax Substitute analysis is very similar to the true Japan Wax, having a melting point of about 54° C. Acid Number 5.4. Ester Number 196. Iodine Number 10-12. It is packed in 1 lb. cakes, in cases containing approximately 105 pounds each; in 8-10 lb. slabs, in cases weighing about 130 lbs. each. Innis, Speiden & Co.

KEROID

Keroid is a Kerosene dispersion of carbon black for use in coating of green tires prior to vulcanization. Spraying the green tire with this product eliminates the use of talc and after vulcanization the tire gives a satin finish which in many instances eliminates its painting prior to wrapping. This product has a pigment concentration of 25%. United Carbon Company, Inc.

KREBS IMPROVED PIGMENTS

Grit-free, easy-mixing pigments eliminate to a large extent the incorporation difficulties encountered with the older type of dry colors. Use of the new colors permits more capacity, rapid grit elimination and strength development, and minimizes equipment tie-ups Heretofore, the chemical dry color industry has been concerned chiefly with improving tinctorial values of their products. The color properties are frequently of minor importance compared to what may probably be called "working properties," or those properties which govern the behavior of a pigment during its incorporation into a paint, printing ink, or other system. E. I. du Pont de Nemours & Co. (Inc.).

L-S #115

Light amber liquid. Forms white milky emulsions with water, having remarkable stability towards acids. The Beacon Co.

LIQRO

Mixture of fatty and rosin acids containing phytosterols. Derived from fats and resins in Pine Wood and similar to liquid rosin or Tall Oil. May be refined by distillation or used in the manufacture of low-priced soaps and soap products, asphalt, emulsions, cutting oils, flotation reagents, pitches, animal dips and disinfectants and many other products where a low-cost efficient soap base is a requirement. Industrial Chemical Sales Div., W. Va. Pulp and Paper Co.

LIQUID BRIGHT GOLD

A new product developed from standardized materials of definite composition and manufactured under rigid chemical control and, because of this, more suited for the faster modern methods of decoration. The new product has greater coverage, flows more freely, goes on more evenly and dries more satisfactorily It adheres at relatively low temperatures and withstands firing at higher temperatures. E. I. du Pont de Nemours & Co. (Inc.).

LITHOGRAPHIC VARNISH DISPERSION OF CARBON BLACK

Developed for use in the printing ink industry in reference to the formulation of high grade, half tones and commercial off-set printing inks, this product represents a high degree of dispersion of carbon black and represents a 30% concentration. Other ingredients that are used in the formulation of such types ot inks are mixed with this product with the consequent elimination of grinding phase. United Carbon Company, Inc.

LUPOMIN

Derivative of a diamine, available as a water-soluble salt, in paste or powder form. Use—softener for textiles and other fibrous materials. Jacques Wolf & Co.

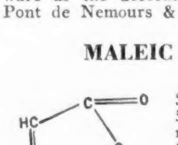
LUPOSEC

Emulsion of waxes and acetate of alumina. Liquid, readily dispersible in water. Use—splashproof and water repellent for use on textiles, paper, etc. Jacques Wolf & Co.

LUSTRE STAINS FOR GLASS

A complete line, from delicate pastels to deep tons, of transparent lustre stains which can be applied to clear glass by spray or brush. With them can be produced unusual 2- or 3-tone effects on glassware closely simulating glass which is produced by the more expensive "bath" process. With these colors it is now possible to apply as many colors to the glassware as the decorator may desire. E. I. du Pont de Nemours & Co. (Inc.).

MALEIC ANHYDRIDE



$C_4H_2O_3$. M. W., 98.02. Solidification Point, 52.5°-53.0° C. Colorless small needles or in fused form. Soluble in many organic solvents. Reactions — Condenses readily with compounds having a conjugated double bond (Diels-Adler reaction). Reacts with water to form maleic acid. Uses—Important and growing component of synthetic resins; raw material for dye intermediates. Suggested uses—As raw material for production of Malic and Succinic Acids. Containers—Packed in 75-lb. and 225-lb. containers. The Barrett Co.

MALEIC ANHYDRIDE

Is a white, crystalline solid that melts at 53° C., and is soluble in acetone, ethyl ether, chloroform, benzol, and hydrocarbons. Like phthalic anhydride, it is used extensively in the manufacture of ester-type varnish and lacquer resins, which are superior in some respects to the phthalic type of synthetic resins. Because of its double bond it is susceptible to a wide variety of chemical reactions. Substituted for phthalic anhydride in certain types of resins, it imparts greater heat resistivity and hardness. Carbide and Carbon Chemicals Corp.

MANNIDE DIPALMITATE (G-841)

Bland, light yellow, ester type, synthetic wax. Melting point around 44° C. Acid number 5 to 10. Specific gravity 1.05. Sparingly soluble in hydrocarbons and natural oils. Insoluble in water. Has good adhesive and lubricant properties. Useful as a protective wax coating which is readily removed by common detergent. Atlas Powder Company.

MANNIDE MONOOLEATE (G-948)

Liquid, ester type emulsifier. Low setting point (–5° to 0° C.). Acid number below 7. Specific gravity about 1.0. Soluble in hydrocarbons, alcohols, esters, natural oils. Not soluble in water. Non-hygroscopic. Excellent emulsifier for oils and waxes. Has very high water retention properties. Unusual tolerance to electrolytes, particularly acids and acid salts. Usually gives water in oil type emulsions. Useful in cosmetics—especially in the preparation of ointment bases and creams. Atlas Powder Company.

MANNITAN MONOOLEATE (G-954)

Viscous, oily, ester type emulsifier of low setting point (10° to 15° C.). Acid number below 6. Specific gravity 1.00 to 1.05. Readily soluble in vegetable oils, alcohols, hydrocarbons. Vegetable oil emulsions formed with its use are generally oil in water type. Useful for cosmetic preparations. Atlas Powder Company.

MANNITOL GLYCERYL MONO STEARATE S 165

Tan colored paste. Sp. Gr., 1.01. M. P., 59-61° C. Free fatty acid, 1-3%. 3% dispersion in water has a pH of 9.9. Soluble hot in most organic solvents and oils. Glyco Products Co., Inc.

MANNITOL GLYCERYL MONO OLEATE S 164

Yellow fluid paste. Sp. Gr., 1.01. Free fatty acid, 1-3%. 3% dispersion in water has a pH of 9.5. M. P., 35° C. Soluble hot in alcohol and most organic solvents and oils. Glyco Products Co., Inc.

MANNITOL GLYCERYL MONO LAURATE S 163

Tan colored paste. Sp. Gr., 1.02. M. P., 35-40° C. Free fatty acid, 2-3%. 3% dispersion in water has a pH of 8.3. Soluble hot in alcohol and most organic solvents and oils. Glyco Products Co., Inc.

MANNITOL HEXAACETATE

$C_6H_8O_6(CH_3CO)_6$. Colorless, odorless crystals. Nonhygroscopic. M. P. 124° C. Water-insoluble. Stable to mild acids. Hardener for cellulose acetate and nitrocellulose lacquers. Hardening properties in excess of camphor or triphenyl phosphate for cellulose acetate plastics. Gives harder product without increasing molding pressure, thus retarding creep after forming. Use increases opacity. Shipped in 5- and 25-lb. tins, 250-lb. bbls. Atlas Powder Co.

MANNITOL TRIACETONATE

Triisopropylidene mannitol $C_6H_8O_6(C(CH_3)_2)_3$. B. P. 170-175° C. at 25 mm. M. P. 68-69° C. Colorless, odorless, crystals. Nonhygroscopic. Sol. most organic solvents; insol. water. Stable to alkalies, sensitive to acids. Used to introduce mannitol into organic solvents as in rosin soldering flux. Plasticizer for cellulose esters and ethers. Shipped in 5- and 25-lb. tins, 250-lb. bbls. Atlas Powder Co.

MAPICO RED #297

Developed at company's plant in Monmouth Junction, N. J., primarily and essentially for the rubber industry. Analyses as follows: Fe_2O_3, 99.0%; Mn, less than 0.5%; water-sol. salts, less than 0.25%; ignition loss, less than 0.5%; copper, not over spectroscopic traces pH, 8.5; sulfates (SO_3), below 0.2%; no acidity; alkalinity, below 0.0005% as Na_2CO_3; sol. iron salts, below 0.0015%. Tests conducted for aging have proven this color about 10% superior to any other red oxide now on the market. Binney & Smith Co.

MELAMAC 560-8

Made from Melamine. An alkyd plasticized thermo-setting resin especially suggested for baking enamels in white and pastel tints for use on stove parts, radiators, electrical equipment and other appliances subjected to high temperatures. Also suitable for use in enamels for refrigerators, cabinets, metal furniture, bicycles, toys, etc. Adhesion, distensibility and other characteristics may be adjusted as required for various surfaces by blending with REZYL 92-5. Such enamels will bake on ordinary schedules ranging from one hour at 225 F. to five minutees at 325 F., the schedule depending on pigment, film thickness, and resistance required. American Cyanamid & Chemical Corp.

MELAMINE

$C_3N_3(NH_2)_3$. A trimer of cyanamide. Mol. Wt., 126. M. P., 354° C. Sp. Gr., d_{25} 1.57. Solubility in water, 0.5% at 25° C., 5.5% at 90° C. Insoluble in inert organic solvents. Difficultly soluble in polar solvents. Derivation—From Cyanamide or from dicyandiamide. Uses—For synthetic resins and chemical synthesis. American Cyanamid & Chemical Corp.

MESITYL OXIDE

$(CH_3)_2C{=}CHCOCH_3$. Powerful solvent, partially soluble in water, B.P. 128.0° C.; toluol dilution ratio, 3.8. Dissolves low-viscosity cellulose acetate, polyvinyl chloride, and ethyl cellulose. This unsaturated ketone has dual possibilities as an intermediate, either through reacting the carbonyl group with amines, aldehydes, cyanides, and other families, or by saturating the double bond with halogens and haloid acids. Carbide and Carbon Chemicals Corp.

META-CRESOL

m-$CH_3C_6H_4OH$. M. W. 108.06. 98.100% grade. Water white liquid (M. P. 11-12° C.). B. P. 202.8° C. Sol. alcohol; insol. water. Uses—intermediate in mfr. dyestuffs, fungicides, germicides, plastics. Reilly Tar & Chemical Corp.

METHALLYL ALCOHOL

$CH_2{:}C(CH_3).CH_2OH$. Mol. Wt. 72.10. B.P. 114° C. Sp. Gr. 20/4° C. 0.852. Refr. Index 20° C. 1.426. Flash-Point ASTM o.c.° F. 94. Sol. in Water Wt. % at 20° C. 15. Very reactive at the hydroxyl group to form esters, ethers, unsaturated aldehydes, or ketones. Reactive to addition at the double bond. Suggested uses—Synthesis of pharmaceutical, industrial chemicals, and resins. Developed by Shell Development Co., Selling Agents, R. W. Greeff & Co., Inc.

METHALLYL CHLORIDE

$CH_2{:}C(CH_3).CH_2Cl$. Mol. Wt. 90.56. B.P. 72° C. Sp. Gr. 20/4° C. 0.926. Refr. Index 20° C. 1.428. Flash-Point ASTM o.c.° F. .14. Sol. in Water Wt. % at 20° C. less than 0.1. Highly reactive to replacement at chlorine atom due to allylic structure. Addition readily takes place at unsaturated linkage. Suggested uses—Synthesis in pharmaceutical and industrial chemical field to form esters, amines, chlorohydrins, polyhydric alcohols, etc., Synthesis of resins. Fumigants. Developed by Shell Development Co., Selling Agents, R. W. Greeff & Co., Inc.

METHYL AMYL CARBINOL

$CH_3(CH_2)_4CHOHCH_3$. B.P. 160.4° C. The first heptyl alcohol to be made commercially. This secondary alcohol should be of interest in the manufacture of plasticizers, xanthates and wetting agents; should be tried wherever the use of a medium-boiling alcohol is indicated. Carbide and Carbon Chemicals Corp.

METHYL CYCLOHEXANE

C_7H_{14}. M.W. 98.18. Water-white (less than 20 Hazen) liquid, 95% distilling within 2.0° C.; boiling range, 100.0-103.0° C. Leaves no residue on evaporation, and has no acidity. Water content, less than 0.2%; Sp. Gr. at 25/4° C., 0.763-0.766. Flash point, less than 10° F. Produced by hydrogenating toluol. Used as a solvent for many oils, fats, waxes and other materials, such as crude rubber, bitumen, and ethyl cellulose. May also be used as a degreasing solvent. Lbs. per gal., 6.4. The Barrett Co.

METHYL CYCLOHEXANOL

$C_7H_{14}O$. M.W. 114.18. Water-white (less than 20 Hazen) liquid, 95% distilling within 5.0° C.; boiling range, 169.0-176.0° C. Leaves no residue on evaporation, and has no acidity. Water content, less than 0.2%; Sp. Gr. at 25/4° C., 0.911-0.916.. Flash point, approx. 68° C. Principally, a mixture of 2 isomers produced by the hydrogenation of metaparacresol. Uses—solvent for many fats, oils, waxes, natural and synthetic resins; mfr. of emulsion stabilizers, homogenizers, and blending agents; mfr. of soaps, lacquers, plastics, polishes, etc. The Barrett Co.

METHYL CYCLOHEXANONE

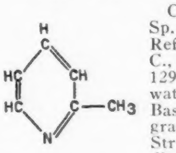
$C_7H_{12}O$. M.W. 112.16. Water-white (less than 20 Hazen) liquid, 95% distilling within 4.0° C.; B.P. 165.0-171.0° C. Leaves no residue on evaporation; has no acidity. Water content less than 0.2%; Sp. Gr. at 25/4° C., 0.910-0.914. Flash P., approx. 53° C. Principally, a mixture of 2 isomers produced by incompletely hydrogenating metaparacresol. Uses—mfr. lacquers, enamels, inks, polishes, resins; solvent for cellulose esters and ethers, crude rubber, oils, fats, waxes, and many natural and synthetic resins. The Barrett Co.

METHYL OLEATE

Orange-colored ester, faint fatty odor. Sp. Gr. at 28° C., 0.866; dist. range (15 mm.), 200-215° C. Freezing P., below 0° C. Acidity, 4.6-5.3% free fatty acid (equal to about 10.6 mg. KOH per g.). Insol. in water; sol. in oils and organic solvents. Uses—plasticizer; mfr. cleaning and polishing compounds, molding lubricants; softener for leather, rubber, waxes, and resins; varnish remover; dye carrier. Glyco Products Co., Inc.

2-METHYL PYRIDINE

(Alpha-Picoline or 2-Picoline)



C_6H_7N. M. W., 93.06. Sp. Gr., 25°/4° C., 0.9395; Refractive Index, N_D, 25° C., 1.4986; B. P., 760 mm., 129.4° C.; Solubility in water at 25° C., complete; Basicity, Ml. N/1 HCl per gram, 10.62. Odor—Strong, resembling Pyridine. Stability—Does not readily discolor on exposure to light and air. Reactions—Like all Pyridines, this product may react through its nitrogen atom in various additions. The Methyl Group is unusually reactive, readily entering into various condensations; one or all three Hydrogen atoms may be replaced by Halogens. Uses—In the preparation of dyes and anaesthetics. Suggested uses—In the synthesis of other pharmaceuticals and organic chemicals as a reactant or purifying agent. The Barrett Co.

METHYL STEARATE

Light straw-colored ester, faint fatty odor, freezing at 27°C., and distilling (15 mm.) at 192-216° C. Sp. Gr., 0.862 at 28° C.; acidity, 12 mg. potassium hydroxide/g.—about 6.3-6.6% free fatty acid. Insol. in water; sol. in oils and organic solvents. Uses—plasticizer for various coatings; softener for leather, rubber, waxes, and resins; mfr. cosmetic lipsticks, dye carriers, special lubricants, stencil sheets and carbon paper, duplicating and stamping inks. Glyco Products Co., Inc.

METHYL VINYL CARBINOL

$CH_2{:}CH.CHOH.CH_3$. Mol. Wt. 72.10. B.P. 98° C. Sp. Gr. 20/4° C. 0.833. Refr. Index 20° C. 1.414. Flash-Point ASTM o.c.° F. 60. Sol. in Water Wt. % at 20° C. ∞. Very reactive at the hydroxyl group to form esters, ethers, unsaturated aldehydes, or ketones. Reactive to addition at the double bond. Suggested uses—Synthesis of pharmaceuticals, industrial chemicals, and resins. Developed by Shell Development Co., Selling Agents, R. W. Greeff & Co., Inc.

MICROGEL

Contains 50% copper and has improved spreading and adherence properties; has gelatinous structure and very fine particle size. Use—control of persistent fruit and vegetable fungus diseases. Tennessee Corp.

MINERAL OIL DISPERSION OF CARBON BLACK

A product more or less recently developed for use in the formulation of carbon copy inks. This product contains 45% carbon black in a low viscosity mineral oil. It represents a very high degree of dispersion of carbon black in medium and eliminates in the compounding of carbon copy inks necessity of grinding and is dustless. The product is extended to lower pigment concentrations by mixing with the oils, waxes, etc., that compose a carbon copy ink. United Carbon Company, Inc.

"MODINAL" D

A highly concentrated fatty alcohol sulfate paste used primarily in textile processing for general detergency, wetting and leveling action on dyes. 'Modinal' D rinses completely and rapidly from all fibers and fabrics, has excellent hard water resistance, is highly stable to acids and does not turn rancid. E. I. du Pont de Nemours & Co., Inc.

MOLY-BLACK

Deep black, lustrous molybdenum-nickel electroplating finish. Can be applied at moderate cost for production of distinctive decorative finishes for automotive and building hardware, electrical fixtures, tools, art objects and many other articles. The black is deep and durable, holds its color and high lustre outdoors and indoors, being extremely resistant to atmospheric corrosion. E. I. du Pont de Nemours & Co. (Inc.).

MONOALKYL ORTHO-PHOSPHATES

RH_2PO_4. The monomethyl, ethyl, propyl, butyl, and amyl compounds are a homologous series of liquid esters which are soluble in water, giving acid solutions. All are soluble in alcohol and in drying oils (e. g., linseed). The amyl and butyl esters are soluble in mineral oil with the aid of blending agents, e.g., amyl acetate and butyl alcohol. They may be used as substitutes for phosphoric acid in special cases, and form interesting salts. Victor Chem. Works.

MONOALUMINUM PHOSPHATE

$Al(H_2PO_4)_3.H_2O$. A white, hygroscopic, micro-crystalline salt having a strong acid reaction. It is readily but not quite completely soluble in water. It is appreciably soluble in methanol and ethanol and slightly soluble with some decomposition in ethyl acetate, acetone and butyl acetate. It is shipped in the form of lumps of about ½" or less in size. Victor Chemical Works.

MONOCHLOROBENZENE

C_6H_5Cl. Mol. Wt. 112.5. Sp. Gr. at 15.5° C. = 1.11 to 1.112. B.P. 131.5° C. Colorless liquid. Soluble in alcohol, carbon tetrachloride, ether; insoluble in water. Freezing point 45° C. Uses—Monochlorobenzene is used as an organic solvent; mfr. nitrobenzenes, phenol, aniline, sulfur dyestuffs, picric acid; solvent for resins in varnishes and lacquers; also ingredient paint and varnish remover. Standard Naphthalene Prods. Co.

MONO-CHLOROTOLUENE

C_7H_7Cl. M. W. 126.5. Sp. Gr. at 25/15° C., 1.075. Boiling range at 760 mm., 158.5-160° C. Chemically stable to water, alkalies and most acids, below 100° C. Clear, colorless liquid, consisting of a mixture of ortho- and parachlorotoluenes. Uses—chemical synthesis; in rubber processing, as a solvent, etc. Cont.—55-gal. drums (450 lbs. net). Heyden Chem. Co.

MONOSTEARIN

Hard, waxy solid, M.P. 55 57° C. Sp. Gr. at M. P., 0.898; sapon. val., 18.3. Insol. in water; sol. in hot alcohol and organic solvents. Glyco Products Co., Inc.

MONTAN WAX SUBSTITUTE #506

This is a substitute for Montan Wax that has found favor with the different consumers of Montan Wax. It is packed in bags weighing 200 to 250 pounds each in the lump or broken form. It has a melting point of about 174 to 175° F.; acid number 3½. Petroleum ether soluble content about 51 to 53. Ester number 16 to 17. Innis, Speiden & Co.

NAPHTHOL AS DISPERSIBLE

A new addition of a substantive type that disperses rapidly and completely in cold water. National Aniline & Chemical Co., Inc.

NAPHTHOLATE AS

Recent addition of a type affording a convenient and time-saving method for preparing material for naphthol dyeing. Readily and completely sol. water; requires no preliminary boiling with caustic soda to bring it into solution. National Aniline & Chemical Co., Inc.

NAPHTHALENE REFINED

$C_{10}H_8$. Mol. Wt. 128.11. Sp. Gr. 1.007-25/25. B.P. 217.9. M.P. 79.4° C. minimum. Prime White Color. Completely soluble in boiling alcohol, soluble in ether and benzol. Manufactured in chipped, crystal, flake, powdered, ball forms. Uses—Preservation of hides, moth preventatives, insecticide, chemical and industrial uses; manufacture of dyestuffs, phthalic anhydride, benzoic acid. Standard Naphthalene Products Co.

NATIONAL SOLANTINE ORANGE 4RL (National)

A direct dye producing a pure orange shade of excellent fastness to light. Particularly well adapted for coloring cotton-rayon union materials dyeing both fibers practically alike. In addition it leaves acetate rayon practically unstained. National Aniline & Chemical Co.

NEO SPECTRA BEADS

Recently introduced to the paint industry as the dustless form of a high-color carbon black. Eliminated the problem of carbon black flying around the mill room. Especially suited to ball or pebble mill grinding of synthetic finish formulations. Packed in air-tight cans. Cannot pick up moisture during transit as do fluffy types of color blacks. Show the valuable property of softer mill pastes, shorter grinding time, improved grind and stability, compared to a fluffy black in the same color range. Binney & Smith Co.

NEOPRENE LATEX TYPE 57

Water dispersion of neoprene for general use where dry neoprene and neoprene cement compositions are not desired. At present commercial applications involve household gloves, coated canvas work gloves, leather finishes, impregnated asbestos gaskets and adhesives where oil, heat and oxidation resistance is required. E. I. du Pont de Nemours & Co. (Inc.).

NEOPRENE, TYPE G

New type of chloroprene rubber, characterized by almost complete freedom from odor, faster rate of vulcanization and better physical and processing properties as compared with earlier types. Finding wide use in oil-resisting articles for personal wear and use, such as shoe soles and heels, boots, work clothing, sink mats and strainers, household gloves, hot water bottles, hospital sheeting, etc. E. I. du Pont de Nemours & Co. (Inc.).

NEW BLUE ND

A basic blue identical with National New Blue DA Conc. except that it is non-dusting. It finds considerable use in the leather industry for producing non-bronzing navy blues. National Aniline & Chemical Co.

NEW BLUE ND CONC.

Basic reddish navy blue of the non-dusting type, particularly adapted for the coloring of leather. National Aniline & Chemical Co., Inc.

NIAGARA BLUE BG

A direct blue for cotton or rayon. Yields bright blue shades of good fastness to perspiration, mineral acids and water, very good fastness to washing and excellent fastness to rubbing and stoving. It is readily soluble, levels well and is suitable for application in all types of machines. Leaves acetate rayon effects unstained. National Aniline & Chemical Co.

"NIAPROOF"

A normal aluminum acetate salt. White powder, readily sol. in cold or hot water. Solutions may be heated to boiling without decomposition. Contains 35-37% active available aluminum as oxide equivalent. In solution, pH varies from 5.1 at 32% to 5.4 at 1% concentration, readily lowered by the addition of acetic acid. Uses—Preparation of water repellent treatments for textiles, leather, and paper. Cont.—fiber drs. (5, 10, 25, 60, 100 lbs.); barrels (200 lbs.). Niacet Chemicals Corp.

"NIAPROOF" B

A basic aluminum acetate salt. White powder, readily sol. in hot water, more slowly in cold. Solutions may be heated to boiling without decomposition. Contains 34-37% active available aluminum as oxide equivalent. In solution, pH only varies from 4.7 to 4.8 from 1-30% concentration, is readily lowered by acetic acid. Uses—preparation of water repellent treatments for textiles, leather, and paper. Containers: fiber drums (5, 10, 25, 60, 100 lbs..), bbls. (200 lbs.). Niacet Chemicals Corp.

NICKEL FLUOBORATE

$Ni(BF_4)_2.7H_2O$. Green crystalline solid, readily soluble in water. Suggested uses—Catalytic reactions and organic synthesis. Harshaw Chemical Co.

NICKEL STEARATE

$Ni(C_{18}H_{35}O_2)_2$. Green powder. M. P. 150-160° C. M. W. 625. Washed ash, 11.4%, soluble ash, 1.6%. Solubility, insoluble in water, alcohol, esters, and other low molecular weight polar compounds. It is soluble in aromatic hydrocarbons and forms gels with mineral spirits and petroleum oils. Suggested use—Lubricants, wax, and waterproofing compounds, coating and plastic compositions, catalyst, leather treatment, detergent in organic liquids, powdered quench in nickel welding. Available in 50-lb cartons. Metasap Chemical Co.

N-DI-n-BUTYL TOLUENESULFONAMIDE

Pale straw-colored liquid, little if any odor. B.P. (8 mm.), 195-220° C. Sharples Solvents Corp.

N-DI-n-BUTYL UREA

Straw-colored, viscous, odorless liquid. Sp. Gr. at 45° C., 0.937. Sharples Solvents Corp.

N-MONO-n-BUTYL TOLUENESULFONAMIDE

Almost colorless solid, of slight odor. M.P., 41° C.; B.P. (10 mm.), 210-230° C. Sharples Solvents Corp.

2-NITRO-1-BUTANOL

$CH_3CH_2CH(NO_2)CH_2OH$. This compound, liquid at ordinary temperatures, can be distilled under vacuum without difficulty. Readily esterified with organic acids; the esters are stable to heat. However, the esters hydrolyze readily and, in alkaline solutions, react to yield nitro butylene and the salt of the acid. Having the structure of a secondary nitro compound, it undergoes condensation reactions with aldehydes to form dihydroxy compounds. Commercial Solvents Corp.

NITROETHANE

$CH_3CH_2NO_2$. The reactions of nitroethane are similar to those of nitromethane but are limited by the presence of only 2 rather than 3 reactive hydrogens in the molecule. It forms ethylamine upon reduction. Commercial Solvents Corp.

2-NITRO-2-ETHYL-1,3-PROPANEDIOL

$CH_2OHC(C_2H_5)(NO_2)CH_2OH$. Quite similar to the corresponding methyl derivative described above, but is more soluble in organic solvents. Its M.W. is slightly higher and its M.P. lower than that of the methyl derivative. Commercial Solvents Corp.

NITROMETHANE

CH_3NO_2 The most reactive of the nitroparaffins. Having 3 active hydrogen atoms, it may be condensed with 1, 2, or 3 molecules of an aldehyde to form mono-, di-, or trihydroxy compounds. It can also be reacted with chlorine under proper conditions to form mono-, di-, or trichloromethane. Another reaction involves its reduction to methylamine by catalytic hydrogenation. Commercial Solvents Corp.

2-NITRO-2-METHYL-1-PROPANOL

$CH_3C(NO_2)(CH_3)CH_2OH$. Isomeric with 2-nitro-1-butanol, described above, but the nitro group is attached to a tertiary carbon atom; it therefore varies considerably from the latter compound in its chemical properties. E.g., it cannot be condensed with aldehydes. Also, it is a solid, whereas 2-nitro-1-butanol is liquid at ordinary temperatures. Esters of 2-nitro-2-methyl-1-propanol can be prepared by the usual methods; these are quite stable, being similar in this respect to such compounds as butyl acetate. Commercial Solvents Corp.

2-NITRO-2-METHYL-1,3-PROPANEDIOL

$CH_2OHC(NO_2)(CH_3)CH_2OH$. One of the simplest nitroglycols which can be produced from the nitroparaffins. In its chemical reactions is similar to 2-nitro-2-methyl-1-propanol. Commercial Solvents Corp.

1-NITROPROPANE

$CH_3CH_2CH_2NO_2$. The reactions of this compound are similar to those of nitromethane and nitroethane. It can be reduced to form n-propylamine. Commercial Solvents Corp.

2-NITROPROPANE

$CH_3CHNO_2.CH_3$. Contains only 1 reactive hydrogen and therefore when condensed with an aldehyde it can form only a monohydroxy nitro compound. Likewise, when reacted with chlorine it yields only 2-chloro-2-nitropropane. Commercial Solvents Corp.

NITROUREA

Fine white crystals. Purity—at least 97%. Nitrourea is useful as an intermediate in the manufacture of semicarbazine (aminourea), the N and NN alkyl and aryl ureas, hydantoic acid, and other organic compounds of high nitrogen content. E. I. du Pont de Nemours & Co., Inc.

NO-DOR

Developed especially to chemically deodorize all odors due to organic decomposition. Pfaltz & Bauer, Inc.

NOHEEV

Silicate of soda (approx. 32.4% Na_2O), designed for use in rotary drilling mud as employed in oil and gas wells as a mud stabilizer. Function is to control the hydrous disintegration of the shale being drilled. Philadelphia Quartz Co.

NONAETHYLENE GLYCOL

$HOCH_2(CH_2OCH_2)_8CH_2OH$. Has a somewhat higher boiling point, a lower vapor pressure, and a lower hygroscopicity than hexaethylene glycol, but its solubility characteristics and applications are rather similar. Carbide and Carbon Chemicals Corp.

NONALDEHYDE (Pelargonic Aldehyde)

$CH_3.(CH_2)_6.CH_2.COOH$. M. W., 158. F. P., 12.5° C. B. P., 72-3/10 mm.; 253-

254° C.; D_4^{17}, 0.9068; Index Refraction, nD 1.43057. Suggested uses—Synthesis, perfumery, pharmaceuticals, flavoring, etc. Various packages. National Oil Products Co.

N NO

Ester type emulsifier. Viscous, water-dispersible, surface-active oil. Soluble in hydrocarbons, alcohols; moderately soluble in vegetable oils. Particularly applicable as a spreader for contact and stomach poisons, arsenate sprays, and the like. Improves the efficiency of plant hormone preparations. Has, in itself, definite insecticidal properties. Atlas Powder Company.

NNOR

Contact insecticide for control of red spider and most soft-bodied insects on roses. NNOR gives high kill of red spiders in young and adult stages, and many kinds of insects such as aphids and thrips. It mixes readily with water, spreads perfectly, is pleasant to apply, and is economical to use. Atlas Powder Company.

NOPCO HON FOAMING AGENT, EMULSIFIER AND DETERGENT

One of the best foaming agents available. As an emulsifier it is stable to alum and hot concentrated acids. Excellent detergent. Suggested use—Detergent for textile processing, rug and upholstery shampoos, dry cleaning compositions, hair shampoos, emulsification of oils, fats, waxes, etc. Packaging—50-lb. cartons and barrels. National Oil Products Co.

NOPCO SHCO OINTMENT BASE

Sulfonated Hydrogenated Castor Oil. M P., 41.5° C. Softening Point, 30.0° C. So_3 Content, 10.0%. pH (5% solution), 6.0-6.3. Suggested use, as a non-alkaline water-washable ointment base having a pH similar to that of the skin. Dissolves oil-soluble and water-soluble medicaments readily. Formulae for U.S.P. and National Formulary ointments using this base are available on request. National Oil Products Co.

NORMAL DECANOL

A normal primary alcohol now commercially available for the first time. It is used as an anti-foaming agent, for economical introduction of decyl groups in chemical manufacture and as a mixed solvent. It is water white and has a bland odor. E. I. du Pont de Nemours & Co., Inc.

NORMAL OCTANOL

A normal primary alcohol now commercially available for the first time. It is used as an anti-foaming agent, for economical introduction of octyl groups in chemical manufacture and as a mixed solvent. It is water white. E. I. du Pont de Nemours & Co., Inc.

NUROZ

M.P. (Capillary tube) 75-77° C., Acid Valve 160-162 Color "N" to "WG". It is being used by the synthetic resin trade. It should have applications in many other industries where rosin is used, especially in varnishes, soaps, printing, etc. Newport Industries, Inc.

NYPENE RESIN

$(ClOH_{16})n$. Thermo-plastic terpene polymer. Specific gravity, .980. Approximate mean molecular weight about 1,600. High M. P. (140-150° C.), pale color, low ash, odorless. Neutral, non-saponifiable. Resistant to water, acid, alkali, and alcohol. Excellent heat stability, and only slight yellowing on ultra violet exposure. Exceptional softening action and tack producing effect on rubber. Compatible with paraffin, natural, and mineral waxes, and polybutene. Nypene is packed in light destructible steel drums, net weight approximately 450 lbs. each. The Neville Co.

OCTYL AMMONIUM PHOSPHATE

60% Soln. Approx. Chem. Constitution $(C_8H_{17})(NH_4)_2PO_4$ and $(C_8H_{17})_2(NH_4)PO_4$. Pale straw color. Slight ester odor. Sp. Gr. 1.06. pH 7.0-7.4. Container—55 gal. non-returnable drum. Monsanto Chemical Co.

ORANAP

Sodium salt of isopropyl naphthalene sulfonate in water-soluble paste form. Use—penetrator and detergent for textiles, etc. The above products are usually furnished in 50-gal. hardwood barrels or drums, but may be purchased in smaller quantities. Jacques Wolf & Co.

OREL

A superior, entirely new lubricant which does not affect rubber in any way. Possesses such penetrating qualities that it goes where ordinary lubricants cannot reach. For this reason it is a perfect anti-squeak for all rubber-to-metal chassis parts; also effective for spring lubrication and other metal-to-metal contacts between the chassis and frame. E. I. du Pont de Nemours & Co. (Inc.).

ORTHOCHLOROBENZALDEHYDE

C_7H_5OCl. M. W. 140.5. Clear, colorless liquid of characteristic aromatic odor. F. P. about 9° C. B. P. at 760 mm., about 212° C. Sp. Gr. 1.245 at 25° C. Uses—dye intermediate; for organic synthesis, and in the plastics trade. Cont.—55-gal. stainless steel drums. Heyden Chem. Corp.

ORTHOCHLOROBENZOTRICHLORIDE

$C_7H_4Cl_4$. M. W. 231. White solid. M. P. 25.4° C. Uses—dye intermediate; in organic synthesis. Cont.—125-lb. carboys. Heyden Chem. Corp.

ORTHOCHLOROBENZOYL CHLORIDE

$C_7H_4O\ Cl_2$. M. W. 176. Colorless liquid. Boiling range at 760 mm., about 118°. F. P. about —6°C. Uses—dye intermediate; for organic synthesis. Cont.—125-lb. glass carboys. Heyden Chem. Corp.

ORTHOCHLOROBENZOYL CHLORIDE

$C_7H_6Cl_3$. M. W. 161. Clear, colorless liquid with irritating odor. Boiling range at 760 mm., about 215° C. Sp. Gr. at 25° C., about 1,276. Uses—intermediate for dyes and other organic chemicals. Cont.—125-lb. carboys. Heyden Chem. Corp.

ORTHO CHLORBENZYL ALCOHOL

C_7H_7OCl. Long white needles from aqueous methanol. Mol. Wt., 136.5. M. P., 69.5° C. to 70.5° C. Uses—Organic synthesis, plasticizing esters, intermediate for dyestuffs, medicinal chemicals. Packing—100-lb. drums. Heyden Chemical Corp.

ORTHOCHLOROTOLUENE

C_7H_7Cl. M. W. 126.5. Clear, colorless, mobile liquid. Sp. Gr. at 15/15° C., 1.078. Boiling range at 760 mm., 158.5-159.5° C. Stable to alkaline solutions, dilute acids and most concentrated acids at normal temperatures. Uses—intermediate for dyes and for organic synthesis. Cont.—55-gal. drums. Heyden Chem. Corp.

ORTHODICHLOROBENZENE

$C_6H_4Cl_2$. Mol. Wt. 146.96. Sp. Gr. 1.301 at 15.5° C. Distillation Range—90% distills between 172 and 180° C. Flash-Point opencup 150° F. Weight per gallon approximately 10.75 lbs. Colorless or light yellow liquid. Soluble in alcohol, ether, carbon tetrachloride, benzene; insoluble in water. Uses—Penetrant for shoe dyes, solvent for gum, waxes, grease, resins in varnish and lacquers; dewaxing and degreasing; insecticide against wood boring insects such as termites; fly and other liquid sprays; tar remover for automobiles, ingredient for paint removers; manufacture preservative paints. Standard Naphthalene Prods. Co.

ORTHOSIL

The original Pennsalt Cleaner, is primarily recommended for the heavy duty cleaning of ferrous metals. Since Orthosil was developed, companion products known as Pennsalt Cleaners have been introduced on the market. Each Pennsalt Cleaner is designed for a particular type of cleaning operation. In short, Orthosil is an industrial cleanser. Pennsylvania Salt Mfg. Co.

P. C. WAX #2

This is produced in the flake form, packed in bags weighing approximately 150 pounds each. This P. C. Wax #2 has a melting point of about 170-174° F., and due to its high melting point and general characteristics, it is today being used in conjunction with Carnauba Wax in the manufacture and composition of other materials. Innis, Speiden & Co.

P-L 825

Light amber liquid emulsifying agent which forms milky emulsions of fair stability towards acids and water. The Beacon Co.

PARACHLOROBENZALDEHYDE

C_7H_5OCl. M. W. 140.5. White, crystalline solid. B. P. at 760 mm., 214° C. F. P., about 44° C. Uses—intermediate for dyes and organic synthesis; raw material for plastics and resins. Cont.—55-gal. stainless steel drums. Heyden Chem. Corp.

PARACHLOROBENZOTRICHLORIDE

$C_7H_4Cl_4$. M. W. 231. Colorless liquid. Boiling range at 760 mm. 245° C. Uses—dye intermediate, for organic synthesis. Cont.—125-lb. carboys. Heyden Chem. Corp.

PARACHLOROBENZOYL CHLORIDE

$C_6H_4OCl_2$. M. W. 176. Boiling range at 760 mm., about 222° C.; at 18 mm., about 111° C. F. P., about 16° C. Uses—dye intermediate and intermediate for organic synthesis. Cont.—125-lb. glass carboys. Heyden Chem. Corp.

PARA CHLORBENZYL ALCOHOL

C_7H_7OCl. Long white needles. Mol. Wt., 136.5 M. P., 70° C. to 71° C. Uses—Organic synthesis, plasticizing esters, intermediate for dyestuffs, medicinal chemicals. Packing—100-lb. drums. Heyden Chemical Corp.

PARACHLOROBENZYL CHLORIDE

$C_7H_6Cl_2$. M. W. 161. Clear, colorless liquid. Sp. Gr. at 25° C., 1.26. Boiling range at 760 mm., about 220° C. Uses—dye intermediate; for organic synthesis. Cont.—125-lb. carboys. Heyden Chem. Corp.

PARACHLOROTOLUENE

C_7H_7Cl. M. W. 126.5. Clear, colorless liquid. Sp. Gr. at 15/15° C., 1.065. Boiling range at 760 mm., 161.4-163° C. F. P., not less than 6° C. Chemically stable to practically all acids and alkalies at normal temperatures. Uses—intermediate for dyes and organic synthesis. Cont.—55-gal. iron drums. Heyden Chem. Corp.

PARADICHLOROBENZENE

$C_6H_4Cl_2$. Mol. Wt. 146.96. Sp. Gr. 1.248 at 55° C. Crystallizing point 52.8° C. minimum. B.P. 173.7°. Appearance—White crystals, 7 sizes. Soluble in ether, alcohol, carbon tetrachloride. Uses—Moth and insect repellent, agricultural insecticide, such as peach tree borers; mfr. deodorants, sanitary supplies, and dyestuffs. Standard Naphthalene Prods. Co.

PARAQUA WAX

A self-emulsifying Paraffin Wax to which it is only necessary to add boiling water to produce a stable emulsion. The Beacon Co.

PARATEX

Low-cost, one-bath waterproofing paraffin emulsion. Similar in many respects to "Hydrotex." A 4% solution is required in waterproofing. 40% of a 20% aluminum acetate (by weight of "Paratex") is suggested as an addition to the "Paratex" solution in water. The Beacon Co.

PENCIL VIOLET 2B

A bright, basic violet whose smooth working properties render it of particular interest for the coloring of the so-called "indelible" pencils. National Aniline & Chemical Co.

PENETRATING WOOD FINISH

Du Pont Penetrating Wood Finish penetrates into the pores of the wood, sealing them against dirt and grime to produce a tough, hard surface which will not scratch or mar as readily as shellac or most varnishes. It dries with a fairly dull lustre to which, if desired, wax may be applied to impart additional lustre. Requires no other varnishes, waxes or preservatives over it. Produces a finish about the same color as is obtained with white shellac. Covers approximately 500-600 square feet, one coat per gallon. E. I. du Pont de Nemours & Co., Inc.

PENSAL

A laundry detergent in concentrated form free from the inert alkali substances found in most soap builders. Used in the laundry industry as an assistant to soap in helping it remove more dirt in a shorter length of time. Pennsylvania Salt Mfg. Co.

PENSAL-M

A modified form of Pensal. Contains a blend of several alkalies of recognized detergent qualities in combination with an unusual type of wetting agent. Used in the laundry as a soap builder and being less concentrated than Pensal is more adaptable to laundries desiring a milder type of alkali. Pennsylvania Salt Mfg. Co.

PENTACHLOROPHENOL

C_6HOCl_5. M. W. 266.4. White, solid or needle-like crystals; crystallizing point, 190.2° C. Very slightly sol. water; insol. aqueous ammonia; sol. in numerous organic solvents. Uses—industrial preservative; agricultural fungicide; wood stain control in lumber, etc.; preservation of pulp and paper, rubber and latex, etc.; mfr. fungus-resisting paints. Monsanto Chemical Co.

PENTAERYTHRITOL

$C(CH_2OH)_4$. White amorphous powder. Sp. Gr., 1.35; M.P., 262° C.; M.P., 180° C.; C.P., 250°. Sol. water; slightly sol. methanol; insol. carbon tetrachloride, ether. Uses—preparation alkyd resins, mfr. explosives; esters used as plasticizers, solvents, separating agents, and lubricants Grade—tech. Cont.—cartons (5, 25, 50 lbs.), drums (125 lbs.), bbls. (250 lbbs.). Niacet Chemicals Corp.

PENTAERYTHRITOL FORMAL

$(CH_2O_2C_2H_4)_2C$. White crystalline solid. M.P. 50° C. with a characteristic odor. Stable to aqueous alkalies. Soluble in water, hydrocarbons and ethers. Heyden Chemical Corp.

PENTAERYTHRITOL (Pure)

$C(CH_2OH)_4$. M. W. 136. White, crystalline, odorless powder. M. P. about 250° C. Sol. in water at 20° C., about 1:10. Ash, 0.010% max.; no sulfates or chlorides. Uses—mfr. esters and other derivatives for the pharmaceutical, cosmetic and allied industries; mfr. pentaerythritol tetranitrate, an explosive. Cont. —250-lb. slack bbls. Heyden Chem. Corp.

PENTAERYTHRITOL, TECH.

$C(CH_2OH)_4$. M. W. 136. White, crystalline, odorless powder. M. P., about 210° C. Sol. in water at 20° C., about 1:12. Ash, about 0.25% max.; no sulfate or chloride. Uses—mfr. esters and synthetic resins, and of numerous other technical products Cont.—250-lb. slack bbls. Heyden Chem. Corp.

PENTAERYTHRITOL MONO CAPRATE

$C_9H_{19}COOCH_2C(CH_2OH)_3$. Light amber oil dispersible in water. A neutral compound which is oil soluble and which emulsifies oils in water, suitable for cosmetics. Heyden Chemical Corp.

PENTAERYTHRITOL MONO STEARATE

$C_{17}H_{35}COOCH_2C(CH_2OH)_3$. White, hard wax, dispersible in water. M. P. 50-55° C. A neutral compound which is oil soluble and which emulsifies oils in water, suitable for cosmetics. Heyden Chemical Corp.

PENTAERYTHRITOL TETRA ACETATE

$C(CH_2OOCCH_3)_4$. White crystalline solid. M. P., 82° C. B. P. 155-160° C. at 2 mm. Modifier for film forming materials and plastics. Compatible with a wide variety of substances. Transparent to ultra-violet light. Heyden Chemical Corp.

PENTAERYTHRITOL TETRA BUTYRATE

$C(CH_2OOCCH_2CH_2CH_3)_4$ Water white liquid. B. P., 185-190° C. at 2 mm. Compatible with many resins including polystyrene and chlorinated rubber, and with cellulose derivatives except cellulose acetate. Heyden Chemical Corp.

PENTAERYTHRITOL TETRA PROPIONATE

$C(CH_2OOCCH_2CH_3)_4$. White crystalline solid. M. P., 25-30° C. B. P., 170-175° C. at 2 mm. Compatible with cellulose acetate and other film forming materials. Stable at high temperatures. Heyden Chemical Corp.

PERCHLORON

A super-test calcium hypochlorite in dustless form. Being unusually stable, it permits the storage of chlorine in a convenient form, ever ready to release its avalaible chlorine when mixed with water. Used in water purification, food industry and laundries as a means of making either calcium or sodium hypochlorite solutions. Pennsylvania Salt Mfg. Co.

PERMANOL
(a Syntan)

A sulfonic acid condensation product in liquid form. The free sulfuric acid acidity has been completely neutralized and the sulfonic acidity neutralized to a definite acidity. Physical properties—neutral salt crystallizes out at temperatures below 40° F. Uses—Specifically designed to produce superior light-fast white leathers. Container—Hardwood barrels, net wt. about 450 lbs. Monsanto Chemical Co.

PHENOTHIAZINE

$C_{12}H_9NS$. A synthetic product made by reacting diphenylamine with sulfur. M.P. 181° C. Soluble in acetone, toluene, benzene. Very insoluble in water. Now receiving wide attention as a new drug for removing internal parasites from sheep, swine, horses, goats, cattle and poultry. Non-toxic in therapeutic dosages and effective on many different kinds of internal parasites. E. I. du Pont de Nemours & Co., Inc.

PHENYL "CELLOSOLVE"

$C_6H_5OC_2H_4OH$. Water-white liquid with faint aromatic odor, B.P. 244.7°C. Partially soluble in water and containing both the ethanol and phenol groups, will dissolve a host of diverse materials. Almost odorless, is effective as a fixative for delicate perfumes in soaps and cosmetics, where high alcohol solubility is an advantage. Stable in the presence of acids and alkalies, remains colorless, and does not become rancid. Its alcohol group makes it a potential intermediate for the synthesis of plasticizers, germicides, perfume materials, and certain pharmaceuticals. Carbide and Carbon Chemicals Corp.

PHENYL DIETHANOLAMINE

$C_6H_5N(CH_2CH_2OH)_2$. Light-colored solid, M. P. 57° C. Completely dissolved by hot water, alcohol, or ether. Of especial interest for the synthesis of dyes for acetate rayon. These are more readily applied to the goods, crock less than other dyes, and possess better water solubility. Azo dyestuffs may also be obtained by condensing it with aromatic aldehydes such as 2-chlorbenzaldehyde. Also of interest in the synthesis of dyes of the indigo type. Being a tertiary amine, it undergoes the usual reactions of this type of amine. Carbide and Carbon Chemicals Corp.

PHENYL ETHANOLAMINE

$C_6H_5NH(CH_2CH_2OH)$. B. P. 268° C. Only slightly soluble in water; dissolved by alcohol and ether. Used chiefly as an intermediate in the preparation of dyestuffs and related compounds. A secondary amine, it may be further alkylated to produce higher boiling tertiary derivatives. Carbide and Carbon Chemicals Corp.

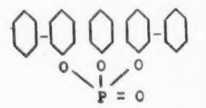
PHORONE

$(CH_3)_2C{=}CHCOCH{=}C(CH_3)_2$. Yellow liquid, B.P. 197.9°C. Has unique freezing point of 28.0°C. Is a nitrocellulose solvent; resembles camphor in many properties. Contains 2 double bonds which combine with reagents which would ordinarily be expected to react only with the carbonyl group. Shows promise as an intermediate for producing rubber chemicals, plasticizers, flotation agents, and inhibitors. Carbide and Carbon Chemicals Corp.

PHTHALIC ANHYDRIDE

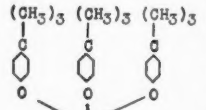
$C_8H_4O_3$. M. W. 148.11. White flakes, M. P. 130.7° C. Produced by catalytic oxidation of naphthalene vapor by air at elevated temperatures. Uses—mfr. synthetic resins for the coatings industries; dye intermediates, synthetic flavor and perfume materials, esters, plasticizers, etc. Cont.—wooden bbls. paper-lined, 230 lbs. net. The Barrett Co.

PLASTICIZER #6



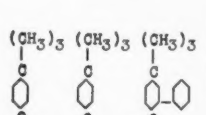
Boiling range (5 mm. Hg.), 285-330° C.; Sp. Gr., 60/4° C., 1.20. Pour point, 13-18° C. Flash point, 250° C. Fire point, 400° C. Viscosity, 25° C. (Centipoises), 10-15,-000. Solubility, 25° C. Alcohol, very soluble. Benzene, ∞. CCl_4, ∞. V.M.P. naphtha, soluble. Water, insoluble. Dow Chemical Co.

PLASTICIZER #7



B.P. (5 mm. Hg.), 300° C.; M. P., 102-105° C.; Flash Pt., 275° C.; Fire Pt., greater than 400° C. Solubility, g./100 g. solvent, 25° C.; Alcohol 2; Benzene, ∞; CCl_4, ∞; V.M.P., Naphtha, soluble; water, insoluble. Dow Chemical Co.

PLASTICIZER #11



Boiling range (5 mm. Hg.), 300-325° C.; Sp. Gr., 60/4° C., 1.07; Pour Pt., 40° C.; Flash Pt., 275° C. Viscosity, 60° C. 9400 centipoises. Solubility, 25° C. Infinitely soluble in acetone, alcohol, benzene, CCl_4, and V.M.P., naphtha. Insoluble in water. Dow Chemical Co.

POLYMERIZED GLYCOL PHTHALATE S 175

Light brown, soft wax-like material. Sp. Gr., 1.19. M. P., 55° C. 5% dispersion in water has a pH of 2.65. Soluble in water. Soluble hot in alcohol, toluol, acetone, ethyl acetate. Insoluble in naphtha, mineral oil and most vegetable oils. Glyco Products Co., Inc.

POLYMERIZED GLYCOL DI OLEATE S 169

Brown semi-solid paste. Sp. Gr.. 1.06. M. P., 23-35° C. Free fatty acid less than 3%. Dispersible in water. 5% dispersion in water has a pH of 2.6-2.8. Soluble in alcohol and most organic solvents and oils. Glyco Products Co., Inc.

POLYMERIZED GLYCOL DI STEARATE S 172

Cream colored wax. Sp. Gr., 1.06. M. P., 29-30° C. Free fatty acid, less than 3%. 5% dispersion in water has a pH of 2.6-2.8. Soluble hot in alcohol and most organic solvents. Glyco Products Co., Inc.

POLYMERIZED GLYCOL MALEATE S 176

Soft brown wax. Sp. Gr., 1.19. M. P., 58° C. Soluble hot in water, alcohol, acetone, methyl and ethyl acetate. Insoluble in naphtha, mineral oil and cottonseed oil. Glyco Products Co., Inc.

POLYMERIZED GLYCOL DILAURATE S 168

Dark brown soft wax. Sp. Gr., 1.05. M. P., 53-54° C. Free fatty acid, less than 2%. Dispersible in water. 5% dispersion in water has a pH of 2.7. Soluble hot in alcohol. Insoluble in naphtha and mineral oil. Glyco Products Co., Inc.

POLYSTYRENE

$(C_8H_8)N$. Softening Point—Various, according to degree of polymerization. Color—Light yellow to water white. Solubility—Soluble in aromatic hydrocarbons, chlorinated hydrocarbons and esters. Resin characteristics—Thermoplastic. Molds under pressure at temperatures of 150-200°C. Very low water absorption. High dielectric value. High mechanical strength. Modifications—Sometimes modified with plasticizers or fillers. Uses—Molding by injection, extrusion or casting. Impregnation of electrical coils. Lamination of fabrics. Bonding of abrasive wheels. Surface finishes. The Barrett Co.

PROPYLENE GLYCOL MONORICINOLEATE S 238

Dark amber-colored oil. Sp. Gr., 0.98. Free fatty acid, less than 5%. Insoluble in water. Soluble in alcohol and most organic solvents and oils. Glyco Products Co., Inc.

POTASSIUM CYANATE

KCNO. A white crystalline solid, specific gravity 2.05. Readily soluble in water and anhydrous ammonia, insoluble in absolute alcohol. Melts at dull red heat without decomposition. Principal consumption of Potassium Cyanate is in the manufacture of organic chemicals and drugs. Hypnotics, narcotics and similar drugs are made from this product. Typical products are known chemically as substituted ureas, urethanes or hydantoins. General Chemical Company.

POTASSIUM CYANIDE

KCN. A white, granular crystal containing 94-96% KCN. Melts at 1170° F. Deliquescent. Very soluble in water. Low in impurities. Potassium Cyanide finds preference over Sodium Cyanide for certain industrial applications due to its superior performance, as in gold and silver plating. It is also used as an ingredient in heat treating baths to reduce the melting point of Sodium Cyanide. The first commercially produced domestic product in this country. General Chemical Company.

POTASSIUM SILICATE

$K_2O.(SiO_2)3.9$. Weight ratio $SiO_2/K_2O=2.5$. Impurities: traces only of calcium, barium, strontium and sodium oxides. Available in broken lumps and powdered form as well as aqueous solutions. The "No. 30" solution has a gravity of 30° Bé and solids content of 29.0%. Uses—flux coating of welding rods; vehicle for non-efflorescing water-type paints; binder in carbon arcs. Differs from sodium silicate mainly in its freedom from efflorescence. E. I. du Pont de Nemours & Co. (Inc.).

POTASSIUM THIOCYANATE
(Potassium Sulfocyanide)

KCNS. Colorless, deliquescent crystals. Specific Gravity 1.9. M.P. 172° C. Decomposes at 500° C. Soluble in water, alcohol and acetone. Uses—Manufacture of metallic and organic thiocyanates, and for the preparation of thioureas and other organic chemicals used as intermediates in preparation of insecticides, dyes, pharmaceuticals, etc. General Chemical Company.

PROPYLENE LAURATE EDIBLE

Of particular interest as an emulsifying agent to manufacturers of cosmetics, pharmaceuticals and foodstuffs, because of its non-toxicity and great degree of purity. Physiologically harmless and definitely edible. Properties: amber oil, self-emulsifiable in water to form milky-white emulsions; non-hygroscopic and high boiling; miscible with alcohol, glycerine, glycol, hydrocarbons, etc.; pH of 5% aqueous dispersion, 8.0; practically odorless; non-toxic and edible. Physiologically harmless. Low surface tension and viscosity. The Beacon Co.

RED PRUSSIATE DOUBLE SALT

$K_2NaFe(CN)_6$. M. W. 313.09. Min. purity, 99.0%. Fine, odorless crystals, decompose before melting. Non-hygroscopic, stable in air at atmospheric temperatures in absence of reducing vapors. Sol. in water: slightly greater than that of $K_3Fe((CN)_6$ (potassium ferricyanide). Use—as a replacement for red prussiate of potash ($K_3Fe(CN)_6$). American Cyanamid & Chem. Corp.

RESINOL

Water-white viscous liquid resin—water sol., miscible with polyhydric alcohols. Entirely non-toxic and non-corrosive. Forms glossy, transparent films which are tacky and non-drying. Finds use in adhesives, especially for "Cellophane"; textile lubricants and softeners; plasticizer for other water-soluble resins; glues, gums; and as bodying agent for cosmetics. The Beacon Co.

RESISTANT COLORS

Decorations for glass available in a wide variety of colors which not only have more brilliance than formerly but remain practically undimmed by contact with the alkalies in household cleaning preparations. Some of these have been used to produce ware which resembles solid-color china. Now widely used in making permanent decorations and labels on glass bottles and other glass packages. E. I. du Pont de Nemours & Co. (Inc.).

RESOLIN

Synthetic resin in powdered form having many of the properties of shellac gum. Forms transparent films of high gloss and extreme hardness. Its water solution dries water-insoluble. Suggested for use in bright-drying wax emulsions, shoe finishes, and water-repellent textile emulsions. The Beacon Co.

B-Y
Riboflavin Supplement

A rich source of Riboflavin (Vitamin G) for poultry and livestock. Contains a minimum of 60 micrograms of Riboflavin per gram and appreciable amounts of other vitamins of the B complex. The Commercial Solvents Corp.

ROCKRESIN

Cloudy, viscous, water-soluble liquid resin of grayish color. Insol. in every other liquid. Forms glossy, transparent, flexible films which are non-tacky and extremely hard. These films are somewhat harder and more brittle than "Boriresin." Finds special use as a fireproofing agent. The Beacon Co.

RPA No. 3

Crude rubber plasticizing agent; reduces materially the time, labor and power required to prepare rubber for manufacture. In addition, its use facilitates the processing of rubber compounds making possible more uniform and greater production to finished rubber goods. E I. du Pont de Nemours & Co. (Inc.).

RUBBER COATING #24

A flexible coating for rubber covered electric cord. The Beacon Co.

"S & W" AROCHEM 260

Especially designed for use with linseed, dehydrated, castor and fish, as well as China Wood oils; bodies all oils rapidly and dries to a hard tough film over night. Acid No. 12.18 M. P., 150-160° C. It is available in carload quantities in 500-lb. drums. Stroock & Wittenberg Corp.

"S & W" AROCHEM 345

Excellent to replace Ester Gum where additional hardness, bodying characteristics and drying speed are required, with minimum increase in cost. This material has an acid number of 5-10, and a melting point of 110-115° C. It is available in carload quantities in 500-lb. drums. Stroock & Wittenberg Corp.

"S & W" AROCHEM 400

This material is very similar to Arochem 260 with somewhat slower bodying and drying when used with oils other than China Wood but possesses superior alkali and water resistance. Its acid number is 12-18, M. P., 145-155° C. It is available in carload quantities in 500-pound drums. Stroock & Wittenberg Corp.

"S & W" AROPLAZ 945

Medium, pure, semi-oxidizing alkyd, this material is for lacquers requiring high solids, low viscosity, good durability and color retention. It is a combination film-forming and plasticising resin, moderately compatible with basic pigments. It is adaptable for automotive, refrigerator, wood and paper lacquers. Available in quantity in 55-gallon drums. Stroock & Wittenberg Corp.

"S & W" AROPLAZ 1015

Pure alkyd, not oil extended; it is a hard, very pale resin entirely compatible with cellulose acetate and soluble in cellulose acetate solvents. It can be used for imparting solids, adhesion, color retention and gloss to cellulose acetate films, with a minimum sacrifice of toughness. It is available in quantity in 15-gallon open-head drums. Stroock & Wittenberg Corp..

"S & W" AROPLAZ 1085

This material is medium, pure, oxidizing, an alkyd; more-difficult-to-brush than 960 but dries harder and faster to a more gloss-retentive film. Economical, especially for whites, but recommended for all colors. It will take zinc oxide and bakes well, too, without color change. Can be used for farm machinery, refrigerator and radiator surface coverings. Available in quantity in 55-gallon drums. Stroock & Wittenberg Corp.

S & W ESTER GUM C

An essentially neutral tri-abietate, insol. in ethyl alcohol, for very pale varnishes and lacquers. Acid No., 4-6; M.P., 87-92° C.; lbs. per gal. at 20° C., 9.2. Stroock & Wittenberg Corp.

S & W ESTER GUM D

An essentially neutral tri-abietate, sol. ethyl alcohol, for pale spirit varnishes and alcohol-type lacquers. Acid No., 90-100; M. P., 70-75° C.; lbs. per gal. at 20° C., 9.2. Stroock & Wittenberg Corp.

S & W ESTER GUM G

An essentially neutral tri-abietate, softer in nature, for lacquer adhesives. Acid No., 10-12; M.P., 55-50° C.; lbs. per gal. at 20° C., 9.2. Stroock & Wittenberg Corp.

"S & W" ESTER GUM H

Being made from hydrogenated rosin, this ester gum is used for adhesives, paper coatings, wax compounds, etc., where freedom from after-yellowing and after-brittling are essential. It is extremely inert to decomposition and oxi-

dation. Acid No. 5-10, M. P., 75-85° C. Available in carload lots in 500-lb. drums. Stroock & Wittenberg Corp.

SALICYLAMIDE

$C_6H_4(OH)CONH_2$. M.W. 137. White crystalline solid. M.P. 139° C. Slightly soluble in cold water, soluble in hot water, weakly basic solutions, and most organic solvents. In addition to being mildly antiseptic, it is a general anti-mildew and anti-fungus reagent, as is also its mercuration product. Mild narcotic action is also exhibited. Possible uses are suggested in externally applied, mildly antiseptic and fungicidal preparations of the nature of soaps, salves, oils, powders, lotions and tonics. General Chemical Company.

SANTOBRITE

Sodium pentachlorophenate. C_6Cl_5ONa. M. W. 288.39. Prepared as round, brownish gray tablets (about 1 oz. each) with slightly chlorphenolic odor. Moderately soluble in water. Contains 3-4% free alkali (caustic soda). Decomposed by atmospheric carbon dioxide into the active pentachlorophenol, itself water-insoluble. Used principally as the source of pentachlorophenol for sap stain control, in form of a lumber dip. Cont.—7-lb. bags, 10 to an outside container. Monsanto Chemical Co.

SANTOCEL

Very light weight porous solid. Approximate analysis SiO_2 90%, volatile 5.5%, sodium sulfate 3.5%, Fe_2O_3 and Al_2O_3 1%. Santocell is a silica gel from which water has been removed by a process which does not destroy original gel structure. Apparent density 7.5 #/cu. ft. Uses—Heat insulating agent, thickening agent for volatile and non-volatile liquids, dry dispersing agent for dispersing of pigments and dyestuffs, anti-caking agent, flatting agent for paints, varnishes, lacquers, source of highly reactive silica, stiffening agent in crepe rubber. Grades—fine and all size unopacified, fine and all size opacified. Containers—Light metal drum containing 33 lbs. net. Monsanto Chemical Co.

SANTOLENE A

Liquid or low-melting solid (B. P., 150-160° C. at 2 mm.), entirely miscible with gasoline in all proportions. Sp. Gr. at 25° C., 1.00. Viscosity at 25° C., 818 centipoises. Less than 0.05% sol. in water. Use—gasoline color stabilizer and antioxidant. Cont.—125-lb. tins, or 55-gal., returnable tinned drums. Monsanto Chemical Co.

SANTOLUBE 31

Essentially, a phosphite of an alkyl phenol. Generally a crystalline solid at room temperature. Melts at 120-130° F. to an oily liquid, of density about 8.6 lbs. per gal. Used as a corrosion inhibitor in lubricating oils designed for protecting cadmium-silver and copper-lead bearings against the action of the fatty acids formed in certain oils under severe service conditions. Usually employed in crankcase oils in concentrations of 0.25% by weight. Cont.—55-gal. galv. non-returnable iron drums (500 lbs. net). Monsanto Chemical Co.

SANTOLUBE 36

Like "Santolube 31," an inhibitor of bearing corrosion, recommended for use in lubricating oils to protect cadmium-silver and copper-lead bearings against attack by oxidation products formed during the service of the lubricant. It is an oily liquid, an organic compound containing phosphorus, but not a phosphite ester. Cont.—55-gal. non-returnable iron drums (375 lbs. net). Monsanto Chemical Co.

SANTOPOID A

Dark brown, oily, homogeneous liquid; Pour P., below —35° F. Sp. Gr., 1.20-1.30. Viscosity, S. U. at 100° F., 134.5-142.5 seconds. Flash P. (Open Cup), 250° F., min.; Fire P. (Open Cup), 290-300°, min. Use—extreme pressure lubricant base for use in hypoid lubricants as a 10% blend by weight with an oil of the proper viscosity to give the desired final viscosity, etc. Cont.—55-gal., non-returnable iron drums (500 lbs. net). Monsanto Chemical Co.

SARAN THERMOPLASTIC MOLDINGS AND TUBING

Adapted for use wherever extreme service conditions demand a long lasting and highly chemical resistant material. Dow Chemical Co.

SASSENE

Blend of aromatic chemicals having an odor value reminiscent of "Sassafras Artificial," developed as a substitute wherever the latter was used for its odor value. Stable in price, and much cheaper than current prices for "Sassafras Artificial." Givaudan-Delawanna, Inc.

SEALACELL W

A durable transparent, penetrating water-repellent sealer and finish, used alone or with subsequent coats of VARNOWAX, or VARNOWAX and G. F. FINISH, to produce highly transparent, satiny finishes revealing the beauty and detail of the grain in all wood. Excellent water repellent for mineral surfaces. Cannot be finished with ordinary varnishes. Cont.—1, 5, 10 gals. (concentrate); 1, 5, 10, 30, 55 gals. (ready-mixed)). General Finishes, Inc.

SEALACELL 10

Transparent, penetrating sealer; contains very little wax. Consists of several drying oils, resins, and driers; used as a smooth finish, waterpoof coating, and will take varnish and enamel over it as a finish. Cont.—1, 5, 10, 30, 55 gals. (concentrate); 1, 5, 10, 30, 55 gals. (ready-mixed). General Finishes, Inc.

SEALACELL 20

Similar in form and properties to SEALACELL 10, but contains added toxics to impart rot-proofing and insect-proofing properties. Prepared in both ready-mixed and concentrated forms. General Finishes, Inc.

SEALTOX

A recognized wood preservative formulated to the standards of the National Door Manufacturers' Association. Contains penta- and tetrachlorophenols, resin, drying oil, and solvents. Prevents rot, mold, and insect attack in wood. Cont.—1, 5, 10, 30, 55 gals.; tank cars. General Finishes, Inc.

SILENE

Precipitated Calcium Silicate. Slightly alkaline in water suspension. Sp. Gr., 2.05. Bulk density, 16 lbs. per cubic ft. Uses developed—Rubber compounding pigment for high resistance to tear and abrasion. Uses suggested—Paint pigment extender, filler for plastics, cosmetic material. Supplied in 50-lb. multi-wall paper bags. The Columbia Alkali Corp.

SODIUM ALKYL PHOSPHATES

$NaRHPO_4$. The sodium salts of monethyl and amyl o-phosphate are examples of the alkali metal salts which can be prepared from the monoalkyl phosphates. They are marketed as concentrated aqueous solutions. They are insoluble in alcohol. The ammonium salts as well as the alkali metal salts show promise as general humectants with possible use in several industries. Victor Chem. Works.

SODIUM FERRIC PYROPHOSPHATE

A light yellowish brown, amorphous, finely milled powder. It is not appreciably soluble in water. It contains about 15.4% Fe and corresponds in composition approximately to $Fe_4(P_2O_7)_3 \cdot 2Na_4P_2O_7XH_2O$. It has been suggested as a mineral supplement for cereals and flour because it does not promote rancidity. Victor Chemical Works.

SODIUM POTASSIUM AMYL PHOSPHATE

60% sol. in water. Approx. Chem. constitution $(C_5H_{11})NaKPO_4$ and $(C_5H_{11})_2NaKPO_4$. Straw color. Slight ester odor. Sp. Gr. 1.339. pH 60% soln. 7.0-7.4. Suggested use—A substitute for glycerine in vat color pastes. Container—55 gal. non-returnable steel drum. Monsanto Chemical Co.

SODIUM SALTS OF PHOSPHORATED CASTOR OIL

In comparison with sulfonated oils these "phosoils" have a greater number of hydrophilic groups and are more stable in neutral, acid or alkali media. Because of these properties they may be put to good use as emulsifying agents, dispersants, penetrants and wetting agents, in spinning, printing and dyeing, in kier boiling, canning oils, spraying oils and leather tanning The Beacon Co.

SODIUM SALTS OF PHOSPHORATED RICINOLEIC ACID

In comparison with sulfonated oils these "phosoils" have a greater number of hydrophilic groups and are more stable in neutral, acid or alkali media. Because of these properties they may be put to good use as emulsifying agents, dispersants, penetrants and wetting agents in spinning, printing and dyeing, in kier boiling, canning oils, spraying oils and leather tanning. The Beacon Co.

SODIUM SALTS OF PHOSPHORATED TEASEED OIL

In comparison with sulfonated oils these "phosoils" have a greater number of hydrophilic groups and are more stable in neutral, acid or alkali media. Because of these properties they may be put to good use as emulsifying agents, dispersants, penetrants and wetting agents, in spinning, printing and dyeing, in kier boiling, canning oils, spraying oils and leather tanning. The Beacon Co.

SODIUM SULFHYDRATE

(Sodium Hydrosulfide)

NaSH. Light lemon-yellow, solid in flake form. 70-72% total Sodium Sulfhydrate. Water of hydration, 28-26%. Contains less than 5 ppm. iron and less than 1 ppm. Cu., Ni., Cr., Mn., Pb. This new chemical carrying with equal sulfidity approximately one-half the alkalinity of Sodium Sulfide has been developed especially for the tanning industry to afford complete control of unhairing solutions. Its high purity and controlled alkali and sulfur strengths make it an interesting reagent in many reactions in organic synthesis. Dye manufacturers use it where acid reactions are necessary. Shipped in lacquered steel drums 90 and 350 lbs. net. Hooker Electrochemical Co.

SODIUM SULFIDE

Na_2S. Light salmon pink solid in flake form. 60-62% total sodium sulfide. Water of hydration, 38-35%. Contains less than 15 ppm. iron and less than 1 ppm. Cu., Ni., Cr., Mn., Pb. Clear solutions may be made rapidly due to the small flake form and these solutions may be used immediately without settling or filtration because of low impurity content. In manufacture and application of sulfur dyes the controlled strength insures uniform colors. Its high purity affords special advantages in the reduction of nitro compounds in cases where azo groups are present. Used in the synthesis of high quality organic sulfides and thio compounds and in the production of pigments as cadmium yellows and zinc white. Used for desulfurizing rayon without need for settling, decanting or filtering solutions. A preferred constituent of the depilating bath in leath unhairing. Shipped in lacquered steel drums, 90 and 350 lbs. net. Hooker Electrochemical Co.

SODIUM THIOCYANATE

(Sodium Sulfocyanide)

NaCNS. Colorless, deliquescent crystals. Melting point 287° C. Soluble in water and alcohol. Used in preparation of metallic and organic thiocyanates; dyeing and printing textiles; and in the photographic industry and safety match compositions. General Chemical Company.

SOLANTINE ORANGE 4RL

Addition to company's line of fast-to-light direct dyes, particularly adapted for coloring cotton-rayon unions dyeing both fibers practically alike. Leaves acetate rayon practically unstained. National Aniline & Chemical Co., Inc.

SOLANTINE RUBINE LB

A fast-to-light direct red producing bluish red shades on cotton or rayon and leaving acetate rayon unstained. Dissolves easily, levels well and is well suited for use in all types of machines. Not recommended for use on goods that subsequenty are to be rubberized. National Aniline & Chemical Co.

SOLANTINE ORANGE 5RL

A fast-to-light direct orange producing somewhat redder shades than National Solantine Orange 4RL. Possesses excellent fastness to light, sea water and rubbing and leaves acetate rayon practically unstained. National Aniline & Chemical Co.

SOLVAMIN
Riboflavin Concentrate

Solvamin is a new and convenient source of Riboflavin (Vitamin G) for use in food and pharmaceutical products. Solvamin can be supplied with a potency of 5,000 micrograms of Riboflavin per gram, or with a lower potency if desired. The Commercial Solvents Corp.

SOLVIT

Viscous amber-colored hydrophilic ester with many unique interface modifying properties. Miscible with oleaginous and aqueous media. Contains no nitrogen, sulfur or phosphorus. Excellent emulsifying and dispersing agent. Uses—foods, pharmaceuticals, cosmetics. The Emulsol Corp.

SORBIDE

A cyclic dihydric alcohol ether of high purity. $C_6H_8O_2(OH)_2$. Colorless, odorless crystals. M. P. 62°C. B. P. 176.5 at 10 mm. Sol. water, lower alcohols, dioxan, chloroform. Hygroscopic. Has 2 aliphatic hydroxyl groups available for reaction to give esters, ethers and halohydrins. Atlas Powder Co.

SORBITAN

A cyclic tetrahydric alcohol ether of high purity. $C_6H_8O(OH)_4$. Colorless crystals, odorless, sweet with bitter after-taste, M. P. 110-111° C. Sol. water, pyridine, acetic acid, lower alcohols, polyhydric alcohols. Has 4 aliphatic hydroxyl groups available for reaction to give esters, ethers, and halohydrins. Shipped in 5- and 25-lb. tins, 250-lb. bbls. Atlas Powder Co.

SORBITOL DI LAURATE S 216

Brown, soft paste. Sp. Gr., 0.95. Free fatty acid, 7-8%. Insoluble in water. Soluble in alcohol, and most organic solvents and oils. Glyco Products Co., Inc.

SORBITOL-GLYCERYL LAURATE

Light amber liquid. Neutral and edible; completely dispersible in water forming milky emulsions whose concentration is easily controlled. Recommended for use in cosmetics, pharmaceuticals, and food products. The Beacon Co.

SORBITOL LAURATE

Light amber liquid. Acid No., 6-7. Nontoxic; completely dispersible in water, forming milky emulsions. Especially fine in cosmetics, pharmaceuticals, and food products. The Beacon Co.

SORBITOL LAURATE

Pale, straw-colored liquid, of Sp. Gr., 0.9728, and containing 18-19% free fatty acid. 5% aqueous dispersion has pH of 6.8. Sol. in alcohol, hydrocarbon, mineral, and vegetable oil solvents. Self-emulsifiable with water, should be of interest as a non-toxic, neutral material for the cosmetic, food, and pharmaceutical industries. Glyco Products Co., Inc.

SORBITOL OLEATE

Dark amber liquid. Very fine for forming water-in-oil emulsions. The Beacon Co.

SORBITOL OLEATE

Light orange liquid. Sp. Gr., 0.9512. Free fatty acid, 16-17%. Titer, below 0° C. 5% dispersion in water has a pH of 8.55. Self emulsifiable in water. Soluble in certain limits in alcohol. Soluble in hydrocarbon solvents and vegetable and mineral oils. Glyco Products Co., Inc.

SORBITOL STEARATE

Cream-colored solid. Sp Gr., 0.960. M. P., 54-55° C. Free fatty acid, 20-21%. 3% dispersion in water has a pH of 7.7. Partially soluble in alcohol. Soluble hot in hydrocarbon solvents and vegetable and mineral oils. Glyco Products Co., Inc.

SORBITOL TRIACETAL

Triethylidene sorbitol. $C_6H_8O_6(CHCH_3)_3$. B. P. 122-126° C. at 4 mm. n_{D20}=1.4798. Light yellow liquid. Odorless with bitter taste. Slightly hygroscopic. Sol. alcohols, ethers, ketones, esters, amines. Stable to alkalies. Hydrolyzed by acids to sorbitol and acetaldehyde. Plasticizer for cellulose esters and ethers. Suggested for use in imparting alkali resistance to resins and molding compositions. Shipped in 1-, 5-, and 55-gal. containers. Atlas Powder Co.

SORBITOL TRI RICINOLEATE S 211

Brown viscous liquid Sp. Gr., 0.96. Titre, —40° C. Insoluble in water. Soluble in alcohol and most organic solvents and oils. Glyco Products Co., Inc.

SPEEDY WAX

Liquid cleaner and wax; cleans automobile finish and gives a wax polish at the same time. Saves time and effort because it does both jobs at once. Intended chiefly for use on new cars and finishes in good condition but gives excellent results on used cars, too. Suitable for synthetic enamels and metallic finishes as well as "Duco," lacquer and baked enamels. E. I. du Pont de Nemours & Co. (Inc.).

STABILIZER G-4 PURE

A diphenyl methane derivative. M.P. 176° C. Very mild taste and odor. Phenol coeff. of Na Na salt against *E. typhi* and *Staphylococcus aureus*, 90 (20° C.). Sol. alcohol, fatty acids and oils. Use—germicide and fungicide, nontoxic and non-irritating, for pharmaceutical and industrial use. Givaudan-Delawanna, Inc.

STABILIZER G 4-50

Sodium salt of "Stabilizer G-4." Phenol coeff. against *E. typhi*, 57. Mild, phenolic odor; sol. water. Uses—industrial preservative having some fungicidal action. Givaudan-Delawanna, Inc.

STABILIZER G-11 PURE

A diphenyl methane derivative. M. P. 160° C. Very mild taste and odor. Phenol coeff. of Na salt against *Staphylococcus aureus*, 180. Sol. alcohols, ketones, esters. Non-toxic and non-irritating in effective dilutions. Uses—non-volatile germicide for industrial and pharmaceutical use. Givaudan-Delawanna, Inc.

STAMUL

An emulsifying agent for the manufacture of waterproofing emulsions. These emulsions are usually Paraffin Wax-Aluminum Acetate combinations. With the use of Stamul no special equipment is necessary. By the usual procedure a homogenizer or colloid mill is required. Uses—For making Paraffin Wax Emulsions which are stable to aluminum acetate or formate for use in water repellants for textile, paper, etc. The Beacon Co.

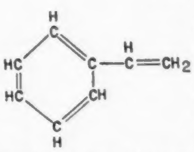
STANNOCHLOR

Anhydrous $SnCl_2$. M.W. 189.6. Sp Gr., 3.95. Contains higher and more stable stannous tin content than Tin Crystals ($SnCl_2.2H_2O$), 1 lb. of the former being approx. equal to 1¼ lbs. of Tin Crystals. Almost entirely free of any metallic impurities (e.g., iron, lead, copper, antimony, etc.). Keeps indefinitely without deterioration. Cont.—bbls. (400 lbs.), kegs (100 lbs.), drums (50 lbs.). Prior Chemical Corp.

STIXSO DD

Specially prepared silicate-of-soda adhesive of closely controlled ratio and viscosity. Of primary interest to the fiber container industry as a ready-to-use, quick-setting adhesive for the manufacture of corrugated paper board. Permits smooth, high-speed board production. Philadelphia Quartz Co.

STYRENE



C_8H_8. M.W., 104.06. Clear colorless liquid.. B. P., 146° C. Sp. Gr., 25° C., 0.904. Penetrating aromatic odor. Reactions—Polymerizes slowly on standing, rapidly when heated or in presence of catalysts, to a clear glassy solid. Uses—Alone and in combination with other unsaturated compounds in manufacture of synthetic resins. As a component of synthetic rubber, e.g., Buna S. Suggested uses—As a raw material for numerous chemical syntheses. Containers—Packed in 5-, 10- and 50-gal. containers. The Barrett Co.

SUBSTITUTE OZOKERITE WAX #583
(Molding Wax)

This is a wax produced as a substitute for the Hard Green Ozokerite Wax used in the electrotyping trade. This molding wax #583 has a Melting Point of about 76° C. which is 168° F; it has a penetration of about 18, which is equivalent of H. G. Ozokerite Waxes, and is a molding wax which spreads and works very evenly for the electrotyper. It is packed in bags of about 200 lbs. each; in slabs 8-10 lbs. each. Innis, Speiden & Co.

SULFINDONE BRILLIANT BLUE 3BCF

Addition to the sulfur color line producing on cotton or rayon, bright greenish shades of blue. Readily soluble; possessing good fastness to light and cross dyeing, very good fastness to washing, fulling and perspiration and excellent fastness to acids and alkali. Levels well; particularly valuable for use in pressure machines on raw stock or yarn. National Aniline & Chemical Co., Inc.

SULFUR DIRECT BLUE RLCF

A direct dyeing sulfur blue yielding reddish blue shades of good fastness to washing and very good fastness to cross dyeing. It is an easily soluble, level dyeing color and is particularly suited for piece goods either in the jib or continuous machine. National Aniline & Chemical Co.

SULFUR YELLOW SCF

A sulfur yellow of reddish tone. Possesses good fastness to washing, fulling and cross dyeing. Suitable for use on materials subsequently to be rubberized. National Aniline & Chemical Co.

SUPERBA BEADS

Combine the unusual grading properties and good color density of Superba Black with newly-discovered advantages of the pellet form of carbon black. Most striking qualities: freedom from dust and efficiency of ball mill grinding. Widely used for automobile and locomotive finishes, are ground in steel ball or pebble mills. Binney & Smith Co.

SUPERCLEAR POWDER

Superclear Powder is made entirely from natural gums by patented process which removes all bark, grit, metallic salts, and other impurities of the crude gums. The process also converts the crude gum into a water-soluble product so that Superclear Powder is completely soluble in cold water. It is used alone as a textile printing thickener and is ideal for discharging colored patterns. It is also used as an addition to starch and dextrine thickeners for printing. It produces sharp outlines, penetrates completely and uniformly and leaves no residue to dull the whites. Jacques Wolf & Co.

SUPER-CLEAR VARNISH

A general purpose varnish for use on floors, interior trim and woodwork and also adapted for exterior work, such as front doors, porch ceilings, railings, etc., which are not completely exposed to the elements. This varnish is unusually high in gloss and build and possesses positive overnite dry. Super-Clear Varnish shows but little discoloration over delicate shades. It possesses good durability and is excellent in its resistance to both hot and cold water. E. I. du Pont de Nemours & Co., Inc.

SYNEKTAN N. C. R.

Chrome salt of sulfonated aromatic compound in liquid form. Use—synthetic tannin for use either alone or as an auxiliary. Jacques Wolf & Co.

SYNEKTAN N. P. P.

Derivative of condensed aromatic compound in liquid form. Use—synthetic tannin for white leather. The above products are usually supplied in barrels containing approximately 500 lbs. net. Jacques Wolf & Co.

TANASOL N. C. O.

Partially neutralized aromatic sulfonic acid in powder form. Use—synthetic auxiliary tanning agent. Jacques Wolf & Co.

TANASOL P. W.

Sodium salt of aromatic sulfonic acid in powder form. Use—bleaching agent for vegetable and chrome leather. Jacques Wolf & Co.

TANNING AGENT G-942

An aqueous solution of a polymeric high molecular weight carboxylic acid, pH value 5.2. Used in tanning for the production of white leather in suede or grain from calf or kid. Produces a high quality, stable white leather with superior color and physical characteristics. E. I. du Pont de Nemours & Co., Inc.

TAR REMOVER

Safe, efficient solvent for removing tar, road oil and gummy substances from automobiles finishes. Will not soften, discolor or dull "Duco," or other car finishes. Easy to use—and works quickly. Applied with a soft cloth, and rubbing spots until they disappear. E. I. du Pont de Nemours & Co. (Inc.).

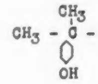
TECHNICAL ALBUMEN

Uses—for textile processing and leather tanning. The Emulsol Corp.

TECHNICAL SODIUM CHLORITE

$NaClO_2$. New commercial oxidizing and bleaching agent. Bleaches cellulosic materials, maintaining strength and eliminating oxycellulose formation, with high whiteness retention. Pale yellow crystalline solid, anhydrous, not hygroscopic, very stable, readily soluble in hot or cold water. Intermediate in series hypochlorite-chlorite-chlorate, with chemical properties intermediate in many respects to hypochlorite ($NaClO$) and chlorate ($NaClO_3$). Containers—100-lb. drums. The Mathieson Alkali Works (Inc.).

p-TERT BUTYL PHENOL



Density, 26/26°, .952; B. P., 730 mm. Hg., 237.7° C. Forms sodium salt in cool caustic solution. Soluble in hot caustic and inorganic solvents. Insoluble in water. Use—An intermediate in resin manufacture. Dow Chemical Co.

TETRADECANOL

$C_4H_9CH(C_2H_5)C_2H_4CH(OH)CH_2CH(CH_3)_2$ or 7-ethyl-2-methylundecanol-4. A branched-chain alcohol comparable in molecular size to the so-called fatty alcohols derived from naturally occurring vegetable and animal fats and waxes. Mild-odored stable liquid, B.P. 263.2° C. Interesting possibilities as an anti-foam where volatile agents would be lost by evaporation under heat, as a plasticizer intermediate, perfume fixative for soaps and cosmetic preparations, and as a base for the mfr. of wetting agents and detergents. Carbide and Carbon Chemicals Corp.

TETRAETHANOLAMMONIUM HYDROXIDE

$N(CH_2CH_2OH)_4OH$. Is a white, crystalline solid, which is very soluble in water and methanol, and melts at 123° C. The commercial product is an aqueous methanol solution, containing 40 to 41% of the hydroxide. This solution is a clear, amber liquid having a specific gravity of 1.15 to 1.17 at 20/20° C. The hydroxide is a strong base, approaching the fixed alkalies in alkalinity. Stable at ordinary temperatures, its aqueous solutions decompose upon heating to form weakly basic tertiary amines. It is therefor of value in processes where it becomes desirable to destroy a strong base that has been useful at lower temperatures. It is a solvent for certain dyes. Unlike stronger quaternary bases it is not a solvent for cellulose. Carbide and Carbon Chemicals Corp.

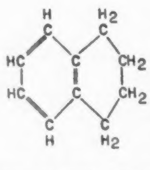
TETRAETHYLENE GLYCOL

$HO(C_2H_4O)_3C_2H_4OH$. Colorless, hygroscopic liquid, B.P. 327.3° C. Completely soluble in water, but not in benzol, toluol, or gasoline. Good solvent for nitrocellulose. As a general plasticizer, increases pliability and retains flexibility even in dry atmospheres. In its applicatons, resembles triethylene glycol. Suggested as a resin intermediate, heat transfer medium, and for other uses where advantage can be taken of its high B.P., low vapor pressure, and complete water solubility. Carbide and Carbon Chemicals Corp.

TETRAETHYLENE PENTAMINE

$NH_2(CH_2CH_2NH)_3CH_2CH_2NH_2$. Somewhat viscous, hygroscopic liquid, B.P. 333° C. The lowest priced of the polyethylene amines. Completely sol. in water and most organic solvents; readily dissolves sulfur, acid gases, and various resins and dyes. Can be used to saponify acidic materials, such at fatty acids, to form soaps. Its multiplicity of reactive amine groups makes it unusually interesting to rubber, textile, resin, and dye chemists. Carbide and Carbon Chemicals Corp.

TETRAHYDRONAPHTHALENE (Tetralin)



$C_{10}H_{12}$. M.W., 132.09; Sp. Gr., 20°/15.5° C., 0.9690; Refractive Index, N_D 20° C., 1.5422; B. P., 760 mm., 207.3° C.; Flash Point, approximate, 80° C.; Odor, sharp; suggestive of naphthalene. Uses—In paints, varnishes, degreasing soaps and many other products which require a hydrocarbon solvent having high boiling and flash points. The Barrett Co.

TEXTAC

Trade-name for new, synthetic resin of the thermoplastic type, for use in textile finishing. Used according to established procedures in combination with starch softeners to prepare finishing mixes that improve the quality of the finished fabric without increasing the cost of finishing. Particularly valuable in cotton piece goods finishing and can be used in pure as well as backfilled finishes. Fabrics finished with mixes incorporating Textac have a body and fullness, and a brilliance of color, unobtainable with starch-softener mixes alone. Hercules Powder Co.

THIOUREA

$NH_2.CS.NH_2$. Mol. Wt., 76.12. Color, white, brilliant crystals. Crystal form, Rhombic (bipyramidal). Sp. Gr., 1.405 (20°/4° C.). Solubility, 9-11 parts in 100 parts of cold water, easily soluble in alcohol, slightly soluble in ether. Mol. heat of combustion, 341.9 cals. M. P., while this is usually given as 180-182° C., rearrangement to ammonium thiocyanate begins at temperatures much below this so that melting points determined in the usual way will vary over a wide range, below 180° C. Uses—In pharmaceuticals, dyes and intermediates, steel pickling, synthetic resins, non-glare mirrors, and for chemical synthesis. Containers—Kegs and barrels. American Cyanamid & Chemical Corp.

TIN NAPHTHENATE, BASIC Sn 22.8%

TIN NAPHTHENATE, NEUTRAL Sn 19.8%

Amber viscous liquid, soluble in mineral spirits and oils. Uses—Compounding oils and as a source of tin soluble in organic solvents. Containers—400-lb. steel drums. Harshaw Chemical Co.

"TI PURE" O

Krebs Pigment and Color Corp. has recently developed and placed on the market this improved titanium dioxide pigment. For the first time a type of titanium dioxide is available which gives exterior paints and enamels a slow chalking rate and vastly improved resistance to fading—important because it enables paint manufacturers to add to their tinted exterior paints the fine durability characteristic of titanium dioxide, already long utilized in white paints. E. I. du Pont de Nemours & Co. (Inc.).

TRAFFIC FILM REMOVER

This is a new quick-working liquid cleaner for use on dull, weathered auto finishes. It is sold only in 1 gallon cans for shop use. While more powerful than the liquid Du Pont Duco Cleaner, it is not as abrasive as Rubbing Compound, and is thus safer to use on the average car. Suitable for Duco, Dulux and all lacquer and enamel finishes. Ideal for cleaning cars before applying wax. Removes Traffic Film, dead pigment and old wax, leaving the finish bright, clean and smooth. E. I. du Pont de Nemours & Co., Inc.

TRIALUMINUM PHOSPHATE

Approx. Chem. analysis Al_2O_3 30.9%. P_2O_5 44.0%. Loss on Ign. 25.2%. pH 6.2% (on 5% suspension). Refracted Index (aver.) 1.548 ± 0.005 (Ng — Np = low). Suggested applications are in ink manufacture, paper and glass. Victor Chemical Works.

TRI-BASIC COPPER SULFATE

Contains 54% copper and is water-insol.; of very fine particle size; chemically stable to atmospheric action. Uses—substitute for Bordeaux Mixture in control of citrus fruit and vegetable fungus diseases; used as a 24-hr. dust. Tennessee Corp.

1, 2, 3-TRICHLOROPROPANE

$CH_2Cl.CHCl.CH_2Cl$. Mol. Wt. 147.44. B.P. 156° C. Sp. Gr. 20/4° C. 1.389. Refr. Index 20° C. 1.484. Flash-Point ASTM o.c.° F. 174. Sol. in Water Wt. % at 20° C. Less than 0.1. A very stable chlorinated hydrocarbon except in the presence of alkali. Suggested uses—Cleaning and degreasing solvent with high flash point. Developed by Shell Development Co., Selling Agents, R. W. Greeff & Co., Inc.

TRIDECANAL
(Tridecyl Aldehyde)

$C_{13}H_{26}O$; $CH_3(CH_2)_{11}CHO$. M. W., 198. M. P., 14° C. B. P., 156°/23 mm.; 127-130° C./18 mm. Suggested uses—Synthesis, perfumery, pharmaceuticals, flavors, etc. Various packages. National Oil Products Co.

TRIETHYLENE TETRAMINE

$NH_2(C_2H_4NH)_2C_2H_4NH_2$. Moderately viscous, watter-soluble liquid, B.P. 277.5° C. Less volatile than diethylene triamine but resembles it in many other properties. Combined with fatty acids, it forms detergents and softening agents. This straight-chain compound possesses a multiplicity of reactive amino groups; offers unusual possibilities in the synthesis of rubber accelerators, pharmaceuticals and dyestuffs. Carbide and Carbon Chemicals Corp.

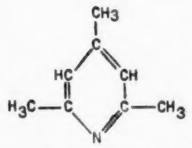
TRIGLYCOL DICHLORIDE

$Cl(C_2H_4O)_2C_2H_4Cl$. Colorless, water-insoluble, high-boiling (241.3° C.) liquid. Useful as a chlorinated solvent and extractant because of excellent dissolving power for oils and hydrocarbons. Shows promise wherever low volatility is desired, as for plasticizer applications. Like other organic chlorides, it reacts with NH_3 to form amines, with cyanides to form nitriles which are starting poi ıts in synthesis of mono- and di-carboxylic acids; has also numerous possibilities as an intermediate for making dyes, resins, or insecticides. Carbide and Carbon Chemicals Corp.

TRIISOPROPANOLAMINE

$(CH_3CHOHCH_2)_3N$ Crystalline, pure-white solid; a mild, water-soluble base M.P. 45.0° C.; B.P. 188.0° C. (10 mm.). A mixture of isopropanolamines liquid at room temperature is also available. The isopropanolamines readily form stable, non-darkening soaps that are excellent emulsifying agents completely soluble in hydrocarbons. Should be investigated by oil, soap, cosmetic, and pharmaceutical chemists. Carbide and Carbon Chemicals Corp.

2, 4, 6-TRIMETHYLPYRIDINE
(2, 4, 6-Collidine)



$C_8H_{11}N$. M.W. 121.10; Sp. Gr., 25°/4° C., 0.9128; Refractive Index, ND, 25° C., 1.4984; B. P., 760 mm., 170-7° C.; Solubility in water at 25° C., 4%; Basicity, Ml, N/1, HCl, per gram, 8.30. Odor, strong sweetish, carrot-like. Reactions—The three methyl groups may enter into condensation reactions. One or more Hydrogen atoms connected with a Methyl group may be replaced by Halogens. The presence of three Methyl groups makes the remaining Hydrogen atoms of the Nucleus more susceptible to substitution reactions such as nitration. Suggested uses—In the synthesis of pharmaceuticals, dyes and other fine organic chemicals. The Barrett Co.

TRIS(HYDROXYMETHYL)AMINO-METHANE

$NH_2C(CH_2OH)_3$. While quite soluble in water, this compound is only slightly soluble in alcohols and is insoluble in aromatic and aliphatic hydrocarbons. Commercial Solvents Corp.

TRIS(HYDROXYMETHYL)NITRO-METHANE

$NO_2C(CH_2OH)_3$. Esters of this compound can be prepared by the usual methods and these esters are quite stable to hydrolysis and can be distilled satisfactorily under vacuum. Quite soluble in water and alcohol but practically insoluble in aromatic and aliphatic hydrocarbons. Commercial Solvents Corp.

UNDECANOL

$C_4H_9CH(C_2H_4)C_2H_4CH(OH)CH_3$; also called 5-ethylnonanol-2. A new synthetic, secondary alcohol containing 11 carbon atoms. Mild-odored, stable liquid, B.P. 225.4° C.; practically insol. in water. Used as an anti-foam agent, especially where high temperatures are encountered, and as an intermediate for the synthesis of plasticizers, perfume esters, cosmetic bases, certain pharmaceuticals and other compounds. Carbide and Carbon Chemicals Corp.

UVERITE 20-H

White powder. Uses—A white opacifier for porcelain enamels. Containers—300-lb. bbls. Harshaw Chemical Co.

V-90

A new baking acid—a heat-treated, anhydrous monocalcium phosphate having a continuous, autogenous, substantially water-insoluble coating. This coating retards the dissolving of the phosphate in a batter or dough, thus delaying the liberation of the leavening gas from bicarbonate of soda until the doughs are formed; more efficient utilization of the leavening gas results, and oven products of better volume, texture, and lightness are obtained. Victor Chemical Works.

VACATONE

By-product of dried yeast and molasses. Contains riboflavin and panthothenic acid, and used in formulation of vitamin-bearing stock and poultry feeds. U. S. Industrial Chemicals, Inc.

VARNOWAX

A durable, transparent, penetrating type of finish, producing a soft lustre. Not subject to discoloration, chalking, checking, etc. Consists of SEALACELL W blended with a tung oil-synthetic resin varnish and solvents. Cont.—quarts, 1, 5 gals. General Finishes, Inc.

VAT PRINTING BLACK G DOUBLE PASTE

Vat printing black of good light fastness and very good fastness to washing, boiling soap, boiling soda, peroxide bleach and chlorine. On cotton or rayon, produces full black shades of excellent fastness to perspiration, acid, alkali and hot pressing. National Aniline & Chemical Co., Inc.

VICTOR WETTING AGENT No. 35-A

Similar to "Wetting Agent No. 58-A" in properties, but of different composition. Its solutions exhibit little tendency to foam. Victor Chemical Works.

VICTOR WETTING AGENT No. 58-A

Wax-like solid giving neutral solutions in water. A highly active surface-tension reducing agent, emulsifier, and wetting-out agent. Concentrations as low as 0.20% will give sinking times of less than 10 seconds in distilled water by the Draves test; effectiveness is approximately the same in the presence of 5% caustic soda or sulfuric acid. Victor Chemical Works.

VINYL-ACETATE

$CH_3—COO—CH=CH_2$. Sp. Gr., 0.9335 to 0.9345 at 20/20° C., B.P., 72.5° C. Colorless mobile liq. stabilized with a copper salt to prevent spontaneous polymerization, accounting for the blue color. Uses—preparation of polyvinyl acetal used in mfr. of transparent resins and plastics, safety glass adhesives, surface coatings, stiffeners, textile sizing and impregnating agents, phonograph records, cements, inks and copolymers with other vinyl derivatives, styrene, and acrylic acid, its esters, and derivatives. Cont.—drums (55, 110-gal.), tank cars (8,000 gal.). Niacet Chemicals Corp.

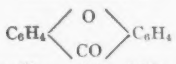
WF-125

Edible emulsifying agent, particularly useful in the manufacture of cosmetics, pharmaceuticals, and foodstuffs. Forms white, milky emulsions with water. The Beacon Co.

WETSIT, CONC.

Sodium salt of a sulfonated substituted aromatic compound. Clear liquid, containing solvents soluble in water. Use—penetrant and detergent for use on textiles. Jacques Wolf & Co.

XANTHONE



White Crystalline solid. M.P. 174° C.; sublimes readily at its melting point. B.P. 355° C. Insoluble in water, slightly soluble in cold ethyl alcohol and acetone, very sparingly soluble in other common organic solvents in the cold; quite readily soluble in hot ethers and ether esters. It is a highly effective larvacide, particularly in the control of codling moth and fruit moth larvae. Other possible uses are as an intermediate in organic synthetics in dyestuffs, perfumes, pharmaceuticals, etc. General Chemical Company.

"ZEREX"

High-boiling, non-evaporating anti-freeze, made from ethylene glycol. Contains special ingredients to protect against rust and corrosion caused by water. Can be used with high-opening thermostats for high temperature operation and will not attack rubber hose, pump packing, gaskets, or aluminum cylinder heads. Mixes perfectly with water, flows freely, transfers heat efficiently and will not mar car finishes, E. I du Pont de Nemours & Co. (Inc.).

ZINOL

Liquid zinc resinate containing 64.0% solids, 4.7% combined zinc. Sp. Gr. at 15.5° C., 0.982; viscosity (Gardner-Holdt) at 25° C., "K"; acid No., 6-10; color, 5L or better. Used as drying agent, dispersing and wetting agent for pigments; mfr. paints, varnishes, and printing inks; helps to eliminate skinning and wrinkling, improve the gloss and adhesion of a film; excellent dispersing agent for oil gels. Cont.—55-gal. galv. drums. Newport Industries, Inc.

ZIREX

Solid zinc resinate; M.P. 130-135° C.; 9.6% combined zinc. Sp. Gr. at 25° C., 1.162; acid No., 0-; color, "N." Used in paint, varnish and printing ink trades, as drying aid promoting pigment wetting and dispersion, helping to eliminate skinning and wrinkling and to inhibit loss of drying strength when used with usual drier combinations. Cont.—500-lb. galv. drums, non-ret. Newport Industries, Inc.

ZITRO

Solid zinc resinate; M.P. 130-135° C. Sp. Gr. at 25° C., 1.130; acid No., 15; color, "N"; 4.8% metallic zinc combined. Used in paint, varnish, and printing ink industries as an aid to complete drying, particularly in conjunction with synthetic resins, and to promote pigment wetting and dispersion; used with usual drier combinations, inhibits loss of drying strength; used with cobalt, makes a paler varnish than other metal-cobalt combinations. Cont.—500-lb. galv. drums, non-ret. Newport Industries, Inc.

ADDITIONAL DESCRIPTIONS

Four descriptions of new chemicals for industry developed by Reilly Tar & Chemical Corp., and one from Philadelphia Quartz Co., were received too late to be included in the main body of the text. These descriptions will be found on page 588.

Names and Addresses of Companies Whose New Products Are Described In This Catalogue

American Colloid Company,
363 West Superior Street,
Chicago, Ill.

American Cyanamid & Chemical Corp.,
30 Rockefeller Plaza,
New York City

Atlas Powder Company,
9th and Market Streets,
Wilmington, Del.

Bareco Oil Company,
4533 Roosevelt Road,
Chicago, Ill.

Barrett Company, The,
40 Rector Street,
New York City

Beacon Company, The,
89 Bickford Street,
Boston, Mass.

Binney & Smith Company,
41 East 42nd Street,
New York City

Calco Chem. Div.
Div. American Cyanamid Company,
Bound Brook, N. J.

Carbide and Carbon Chemicals Corp.,
30 East 42nd Street,
New York City

Columbia Alkali Corp., The,
30 Rockefeller Plaza,
New York City

Commercial Solvents Corp.,
17 E. 42d Street
New York City

Dicalite Company, The,
120 Wall Street,
New York City

Dow Chemical Company, The,
Midland, Mich.

Du Pont de Nemours & Co., Inc., E. I.,
Wilmington, Del.

Eastman Kodak Company, Rochester, N. Y.

Emulsol Corp., The,
59 East Madison Street,
Chicago, Ill.

G. & A. Laboratories, Inc., Savannah, Ga.

General Finishes, Inc.,
1951 University Avenue,
St. Paul, Minn.

General Chemical Company,
40 Rector Street,
New York City

Givaudan-Delawanna, Inc.,
330 W. 42d Street,
New York City

Glyco Products Company, Inc.,
148 Lafayette Street,
New York City

Greeff & Company, Inc., R. W.,
10 Rockefeller Plaza,
New York City

The Harris Seybold Potter Company, Inc.,
1630 Collamer Avenue,
Cleveland, Ohio

Harshaw Chemical Company, The,
1945 East 97th Street,
Cleveland, Ohio

Hercules Powder Company,
Delaware Trust Building,
Wilmington, Del.

Heyden Chemical Corp.,
50 Union Square,
New York City

Hooker Electrochemical Company,
Niagara Falls, N. Y.

Industrial Chemical Sales Div. West
Virginia Pulp & Paper Company,
230 Park Avenue,
New York City

Innis, Speiden & Company,
117 Liberty Street,
New York City

Johns-Manville Corp.,
22 E. 40th Street,
New York City

The Mathieson Alkali Works, Inc.,
60 E. 42d Street,
New York City

Metasap Chemical Company,
First and Essex Streets,
Harrison, N. J.

Michel Export Company,
90 Broad Street,
New York City

Monsanto Chemical Company,
1700 S. 2d Street,
St. Louis, Mo.

Monsanto Chemical Company,
Merrimac Division, Boston, Mass.

National Aniline & Chemical Company, Inc.,
40 Rector Street,
New York City

National Oil Products Company,
First and Essex Streets,
Harrison, N. J.

Neville Company, The,
Neville Island,
Pittsburgh, Pa.

Newport Industries, Inc.,
230 Park Avenue,
New York City

Niacet Chemicals Corp.,
Pine Avenue and 47th Street,
Niagara Falls, N. Y.

Pennsylvania Salt Manufacturing Company.
1000 Widener Building,
Philadelphia, Pa.

Pfaltz and Bauer,
350 Fifth Avenue,
New York City

Pfizer & Company, Inc., Chas.,
81 Maiden Lane,
New York City

Philadelphia Quartz Company,
121 South Third Street,
Philadelphia, Pa.

Prior Chemical Corp.,
420 Lexington Avenue,
New York City

Reilly Tar & Chemical Corp.,
Merchants Bank Building,
Indianapolis, Ind.

Sharples Solvents Corp., The,
23rd and Westmoreland Streets,
Philadelphia, Pa.

Shell Development Company,
4560 Horton Street,
Emoryville, Calif.

Standard Naphthalene Products Company,
Jacobus Avenue,
S. Kearny, N. J.

Stroock & Wittenberg Corp.,
60 East 42nd Street,
New York City

Tennessee Corp.,
621 Grant Building,
Atlanta, Ga.

United Carbon Company, Inc.,
Union Building,
Charleston, W. Va.

United States Industrial Chemicals, Inc.,
60 E. 42d Street,
New York City

Victor Chemical Works,
141 West Jackson Boulevard,
Chicago, Ill.

Virginia-Carolina Chemical Corp.,
Richmond Trust Building,
Richmond, Va.

Wolf & Company, Jacques, Passaic, N. J.

List of Exhibitors

NATIONAL CHEMICAL EXPOSITION

(As of October 29, 1940, supplied by the Exposition Management)

Company	*Booth No.*
American Foundry Equipment Co., Mishawaka, Ind.	**34**
American Hard Rubber Co., 11 Mercer St., New York, N. Y.	**84**
American Instrument Co., 8010-20 Georgia Ave., Silver Spring, Md.	**102**
Anderson-Prichard Oil Corp., 3921 E. Ravenswood Ave., Chicago	**96**
Armour & Co., Union Stock Yards, Chicago, Ill.	**86**
Atlas Powder Co., Wilmington, Del.	**73, 74**
Bareco Oil Co., 4533 Roosevelt Road, Chicago	**51**
Barnstead Still & Sterilizer Co., 2 Lanesville Ter., Forest Hills, Boston, Mass.	**67**
Barrett-Cravens Co., 3262 W. 30th St., Chicago	**39**
Brabender Corp., Rochelle Park, N. J.	**52**
Buffalo Foundry & Machine Co., Buffalo, N. Y.	**81**
Central Scientific Co., 1700 Irving Park Road, Chicago	**114**
Chemical & Metallurgical Eng., 330 W. 42nd St., New York, N. Y.	**87**
Chemical Industries, 522—5th Ave., New York, N. Y.	**32, 33**
Coleman Electric Co., 310 Madison St., Maywood, Ill.	**135**
Commercial Solvents Corp., Terre Haute, Ind.	**113**
The Container Co., 975 Glenn St., Van Wert, Ohio	**139, 140**
Corn Products Refining Co., 17 Battery Pl., New York, N. Y.	**132**
Corning Glass Works, Corning, N. Y.	**108**
Cuno Engineering Corp., Meriden, Conn.	**53, 54**
The J. H. Day Co., Cincinnati, Ohio	**68**
Denver Equipment Co., 1400—17th St., Denver, Colo.	**85**
The Dicalite Co., 520 N. Michigan Ave., Chicago	**1**
The Dorr Co., Inc., 570 Lexington Ave., New York, N. Y.	**129, 130**
The Dow Chemical Co., Midland, Mich.	**105, 106, 115, 116**
Equipment Preview, 737 N. Michigan Ave., Chicago	**63**
Fansteel Metallurgical Corp., North Chicago, Ill.	**88, 89**
Filter Media Corp., Irvington-on-Hudson, N. Y.	**101**
Assn. of American Soap & Glycerine Producers, Inc., 391—4th Ave., New York, N. Y.	**58, 59**
Glyco Products Co., Inc., 148 Lafayette St., New York, N. Y.	**57**
Graver Tank & Mfg. Co., Inc., East Chicago, Ind.	**49**
Great Western Mfg. Co., Leavenworth, Kan.	**142**
W. A. Hammond Drierite Co., Yellow Springs, Ohio	**3**
The Harshaw Chemical Co., 1945 E. 97th St., Cleveland, Ohio	**41**
Hasco Valve & Machine Co., 1819 W. St. Paul Ave., Milwaukee, Wis.	**66**
Haveg Corp., Newark, Del.	**62**
Heil & Co., 3088 W. 106th St., Cleveland, Ohio	**133**
Hercules Powder Co., Wilmington, Del.	**93, 94**
Illinois Testing Laboratories, Inc., 420 N. LaSalle St., Chicago	**29**
Ingersoll Steel & Disc Div., 310 S. Michigan Ave., Chicago	**126**
International Filter Co., 325 W. 25th Pl., Chicago	**98**
Johns Manville, 22 E. 40th St., New York, N. Y.	**75**
Kent Machine Works, Inc., 37 Gold St., Brooklyn, N. Y.	**27**
Kewaunee Mfg. Co., Adrian, Mich.	**4, 5**
Kimble Glass Co., Vineland, N. J.	**97**
Koppers Co., Pittsburgh, Pa.	**117, 118**
Linings Incorporated, 914 S. Wabash Ave., Chicago	**44**
Loeb Equipment Supply Co., 910 N. Marshfield, Chicago	**25**
Marathan Paper Mills Co., Rothschild, Wis.	**22**
H. S. Martin & Co., P. O. Drawer 30, Evanston, Ill.	**70**
The Martindale Electric Co., 1375 Hird Ave., Cleveland, Ohio	**112**
Merck & Co., Inc., Rahway, N. J.	**123, 124, 125**
Merco Nordstrom Valve Co., 400 Lexington Ave., Homewood, Pittsburgh, Pa.	**111**
Miner Laboratories, 9 S. Clinton St., Chicago, Ill.	**60**
National Carbon Co., Inc., Cleveland, Ohio	**38**
National Technical Laboratories, 820 Mission St., South Pasadena, Cal.	**107**
Newport Industries, Inc., 230 Park Ave., New York, N. Y.	**6**
Pangborn Corp., Hagerstown, Md.	**80**
The Pfaudler Co., 89 East Ave., Rochester, N. Y.	**90**
Podbielniak Centrif. Super Cont. Co., 8312-44 So. Chicago Ave., Chicago	**"A"**
Potomac Chemical Co., 607—15th St., N. W., Washington, D. C.	**76**
Precision Scientific Co., 1750 N. Springfield Ave., Chicago	**99, 100**
Pulverizing Machinery Co., 120 Valley Road, Roselle Park, N. J.	**46**
Reilly Tar & Chemical Corp., Merchants Bank Bldg., Indianapolis, Ind.	**82**
Reinhold Publishing Corp., 330 W. 42nd St., New York, N. Y.	**47**
Robinson Mfg. Co., Muncy, Pa.	**20**
Ross & Rowe, Inc., 75 Varick St., New York, N. Y.	**42**
Sarco Co., Inc., 222 North Bank Drive, Chicago	**83**
Schaar & Co., 754 W. Lexington St., Chicago	**92**
Claude B. Schneible Co., 3951 Lawrence Ave., Chicago	**134**
Scientific Glass Apparatus Co., 49 Ackerman St., Bloomfield, N. J.	**70**
The Sharples Corp., 23rd & Westmoreland Sts., Philadelphia, Pa.	**77**
E. H. Sheldon & Co., Muskegon, Mich.	**137, 138**
Sivyer Steel Casting Co., 1675 S. 43rd St., Milwaukee, Wis.	**143, 144**
Foster D. Snell, Inc., 305 Washington St., Brooklyn, N. Y.	**131**
Standard Oil Co., 210 S. Michigan Ave., Chicago	**35, 36**
Victor Chemical Works, 141 W. Jackson Blvd., Chicago	**103, 104**
Wheelco Instruments Co., 1929 S. Halsted St., Chicago	**43**
Wilkens-Anderson Co., 111 N. Canal St., Chicago	**95**

R. E. Zinn
Victor Chemical Works

W. F. Henderson
Visking Corporation

Victor Conquest
Armour & Company

Executive Committee

Chicago Section

American Chemical Society

Dr. R. C. Newton, Chairman
Swift & Company

G. L. Parkhurst
Standard Oil Company

Dr. L. E. May
Sherwin-Williams Company

Prof. C. D. Hurd
Northwestern University

Dr. H. E. Robinson
Swift & Company

W. M. Hinman
Frederick Post Company

Arthur Guillaudeu
Swift & Company

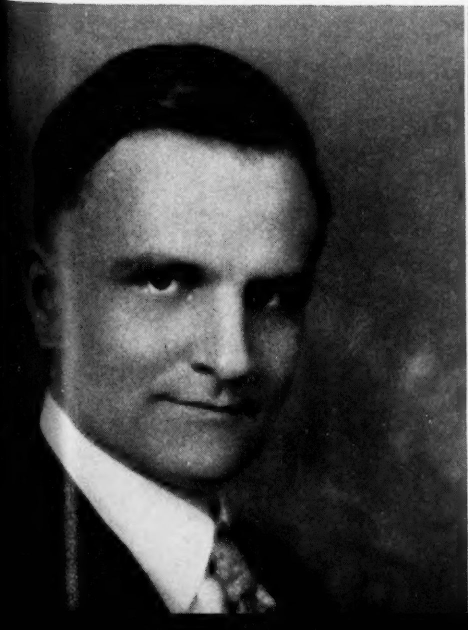
National Chemical Exposition

Hotel Stevens, Chicago

December 11-15, 1940

Dr. C. Robert Moulton
Consulting Chemist

Dr. E. H. Harvey
Consulting Chemist



Dr. R. H. Manley
Armour Institute

Dr. L. M. Henderson
Pure Oil Company

Dr. Colin G. Fink

Dr. Per K. Frolich

Dr. H. G. Knight

Prof. Walter G. Whitman

Dr. Bruce K. Brown

National Industrial Chemical Conference Program

THURSDAY FORENOON—DECEMBER 12, 1940

Presiding, Bruce K. Brown

General Manager of Research and Development, Standard Oil Company, Chicago, Ill.

"New Developments in Synthetic Chemicals and Materials for Fuels and Lubricants"
By Walter G. Whitman, Head of Department of Chemical Engineering, Massachusetts Institute of Technology, Boston, Massachusetts.

"New Developments in Synthetic Chemicals and Materials in the Rubber Industry"
By Per K. Frolich, Director of Chemical Laboratories, Standard Oil Development Company, New York, New York.

THURSDAY EVENING—DECEMBER 12, 1940

Presiding, William F. Henderson

Chief Chemist, Visking Corporation, Chicago, Ill.

"This World of Color"
By A. L. Ter Louw, Sales Division, Eastman Kodak Company, Rochester, New York. Regular meeting of the Chicago Section of the American Chemical Society. This is the Chicago Section's annual Ladies' Night.

FRIDAY FORENOON—DECEMBER 13, 1940

Presiding, C. D. Hurd

Professor of Organic Chemistry, Northwestern University, Evanston, Illinois.

"The Influence of Electrolytic Processes on the Development of the Chemical Industries"
By C. G. Fink, Head of Division of Electro-Chemistry, Columbia University, New York, New York.

"The Influence of New Solvents on the Development of the Chemical Industries"
By C. L. Gabriel, Manager, Sales Promotion, Commercial Solvents Corporation, New York, New York.

"The Influence of the Friedel-Crafts Reaction on the Development of the Chemical Industries"
By E. C. Britton, Director of Organic Research, Dow Chemical Company, Midland, Michigan.

FRIDAY EVENING—DECEMBER 13, 1940

Presiding, Harrison E. Howe

Editor, Industrial and Engineering Chemistry, Washington, D. C.

"Service of Chemistry to Human Nutrition"
By C. A. Elvehjem, Professor of Agricultural Chemistry, University of Wisconsin, Madison, Wisconsin.

"Service of Chemistry to Agriculture"
By H. G. Knight, Chief of Bureau of Agricultural and Engineering Chemistry, Department of Agriculture, Washington, D. C.

SATURDAY AFTERNOON—DECEMBER 14, 1940

Presiding, Allen Abrams

Technical Director, Marathon Paper Mills, Wausau, Wisconsin.

"Effect of New Resistant Materials on Modern Industrial Chemical Development"
By James A. Lee, Managing Editor, Chemical and Metallurgical Engineering, New York, New York.

"Effect of Economic Conservation of By-Products on Modern Industrial Chemical Development"
By L. W. Bass, Assistant Director, Mellon Institute of Industrial Research, Pittsburgh, Pennsylvania.

Film and lecture —"Work Simplification"
By J. R. Bailey of E. I du Pont de Nemours and Company, Wilmington, Delaware.

"Effect of Instruments for the Chemical Industries on Modern Industrial Chemical Development"
By John J. Grebe, Director of Physical Laboratory, Dow Chemical Company, Midland, Michigan.

Dr. John J. Grebe

Dr. C. A. Elvehjem

Dr. Edgar Clay Britton

CONTAINER FORUM

(*Continued from Page 543*)

result from stacking, resist shocks during transportation and handling and withstand puncture and abrasion.

Effective strength of these containers is the ability to withstand stresses and strains under adverse conditions and therefore tests for the various strength factors should be conducted under the most adverse conditions of temperature and humidity which are to be encountered. Examples of this are:

(a) Compression tests show decreases in strength with increases in relative humidity.

(b) Drum tests give increasingly better results with increasing relative humidity. Best results are obtained at about 76 per cent. relative humidity.

It is therefore apparent that compression tests should be conducted under relative humidity conditions approaching 85 to 90 per cent. rather than the usual testing conditions of 40 to 65 per cent. It also follows that drum tests should be conducted under relative humidity conditions of 30 to 35 per cent.

Mr. Hawley also concludes that:

1. Testing corrugated boxes at a common standard of relative humidity conditions is of great value as a means of comparing boxes of similar construction but it cannot be considered to be a reliable indication of the actual value of the box as a shipping container.

2. Testing under a common standard of humidity conditions cannot safely be used to compare the actual merits of corrugated shipping containers that are of dissimilar construction or which are fabricated from dissimilar paper or adhesive materials.

This paper was reported in detail in the July 11th issue of the *Paper Trade Journal.*

All-America Package Competition Announced

Modern Packaging Magazine has announced that the 10th annual All-America Package Competition has been designed to reflect the year's latest and most ingenious developments in the creation of new packages, new displays and new machinery installations.

Entry is open to all designers, package suppliers, machinery manufacturers, package-using firms and others responsible for the creation of the package or display. Any package, display or illustration of packaging machinery installation, which has reached the market or has entered production during the calendar year of 1940, is eligible for entry.

The various phases of the packaging industry will be well represented in the twenty broad classifications which have been set up: (1) Folding Cartons (2) Collapsible Tubes (3) Fibre Cans (4) Glass Containers (5) Metal Containers (6) Set-up Paper Boxes (7) Plastic Containers (8) Machinery and Equipment, Class A (9) Machinery and Equipment, Class B (10) Counter or Shelf Displays (11) Floor Displays (12) Window Displays (13) Shipping Containers (14) Family Group (15) Wraps, Bags, Envelopes: Opaque (16) Wraps, Bags, Envelopes: Transparent (17) Labels and Seals (18) Closures (19) Rigid Transparent Containers (other than glass) (20) Miscellaneous Containers.

The judges represent art, industry, merchandising and the consumer, and their decisions therefore will reflect sound knowledge, as well as a true perspective of the packaging industry.

The judges are: Miss Barbara Daly Anderson, director of the Parents' Magazine Consumer Bureau; Mr. William M. Bristol, Jr., vice-president of Bristol-Myers Co.; Mr. James M. Mathes, president of J. M. Mathes, Inc.; and Mr. George R. Webber, in charge of all package development activities for Standard Brands, Inc.

The current Competition closes on January 6th, next and the winners will be announced in March.

Packaging Exposition Sells 90% Of Its Space

The Exposition Management have announced that 90 per cent. of the available exhibition space has been leased for the American Management Association Packaging Conference to be held in Chicago next April. It is expected that the remaining booths will shortly be leased, thus assuring the largest Packaging Exposition ever held.

An occupational analysis of more than 10,000 registrants at the last exposition shows that 6.5 per cent. were from the chemical industry.

Foreign Literature DIGEST

By

T. E. R. Singer

INDUSTRIAL ORGANIC CHEMISTRY (USSR) Vol. VII, No. 4-5, p. 199 (1940).

A resume is given of the life of the famous Russian chemist and professor, A. E. Favorski, on his 80th birthday. He has been doing research work for 55 years and had been a pupil of Mendeleyev. He has been making a study of the isomeric conversions of acetylene and diethylene derivatives and wrote a dissertation on the subject in 1891. In 1895 he wrote a doctor's thesis on compounds containing the carbonyl group, and these containing oxygen. Some of his theories are reviewed in the article. Since most of Favorski's work was conducted in the pre-revolutionary period when organic chemistry was practically non-existent in Russia, many of his syntheses were adopted abroad in commercial processes. For instance, his simple method for the production of ethylene glycol has been applied for years in the industry of foreign countries. His investigations on the isomerization and polymerization of unsaturated hydrocarbons served as a foundation for Merling's process for synthesis of rubber. Over 50 years ago he discovered the reverse reaction of the combination of alcohols with acetylene, developed abroad into the process for production of simple vinyl esters of various oxy derivatives, capable of being polymerized into resins, etc. After the revolution Favorski was given the equipment and backing to make a study of the production of isoprene, since this process (Merling's) had two serious drawbacks—the condensation which gave only a 35% yield, and the recovery of the acetylene alcohol as an ethylene alcohol. Favorski found that by using caustic potash instead of the expensive sodamide, the yield of dimethyl acetylenyl carbinol could be more than doubled, and the latter could be converted almost quantitatively to dimethyl vinyl carbinol by electrical means. F. also studied the production of chloroisoprene rubber, improving the method. He assisted in the development

(*Continued on page 590*)

N.P.V.L.A. STUDIES DEFENSE

Enthusiastic Crowds at Paint Show at Mayflower in Washington —Robert E. Prince Heads Production Group—The Home of Paint Association Dedicated—Prize Awards Announced—

RELATIONSHIP of the coatings industry to problems arising from the country's new defense program featured the proceedings of the 52nd annual convention of the National Paint, Varnish and Lacquer Association, held in Washington last month at the Hotel Mayflower.

President Ernest Trigg reported to the convention:—

"Within the last few weeks, at the suggestion of M. Rea Paul, we have presented to the National Defense Advisory Commission a comprehensive plan leading to the protection of structures in which war-essential materials are manufactured or housed. The plan included suggestions for a topographical survey of certain portions of the United States to determine the character of surroundings in which such plants are or could be located, the object being to render such structures difficult of identification through enemy aerial observation.

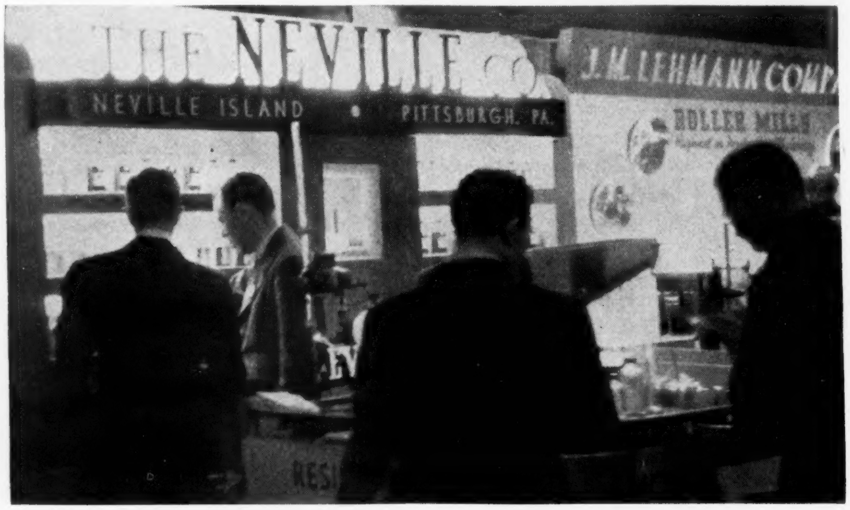
Mr. Trigg also reviewed the raw materials situation and stated that suppliers of such materials to the coatings industry were working very hard to keep the price structure from running out of hand. The N. P. V. & L. A. president also announced that a special committee has been appointed to consider an industry advertising program.

One of the highlights of the meeting was the dedication of the Norris B. Gregg Memorial, the old Levi P. Morton mansion at 1500 Rhode Island Ave., the new home of the association.

Officers for the coming year are:

Vice-president, Carl J. Schumann, of the Hilo Varnish, Brooklyn; treasurer, S. R. Matlack, of Geo. D. Wetherill & Co., Philadelphia. Zone vice-president:—Eastern, William H. Jarden, jr., of McCloskey Varnish, Philadelphia; Southern, A. P. Mills, of the DeSoto Paint & Varnish, Memphis, Tenn.; New England, Harry Hall, Jr., of Boston Varnish, Everett, Mass.; Central, W. A. Alpers, of Cleveland Paint & Color, Cleveland, Ohio; Western, H. S. Margetts, of W. P. Fuller & Co., San Francisco; wholesale division, Harry W. Constant, of United Sash & Door, Wichita, Kans.

The first three days of the week were featured by the technical sessions of the Federation of Paint and Varnish Production Clubs. Program was arranged by Dr. Joseph Mattiello of Hilo Varnish. The Paint Show—a regular feature of the convention was well attended and exhibitors of raw materials, containers, filling machinery, etc., were highly enthusiastic over the results.



Officers of the Production Group for 1940-41 include the following:

President, Robert E. Prince, of James B. Day & Co., Chicago; vice-president, J. F. McMenamin, Felton, Sibley & Co., Philadelphia; treasurer (re-elected), C. W. Clark, duPont, Wilmington, Del.; secretary (re-elected), George B. Heckel, Philadelphia; assistant treasurer, Paul O. Blackmore, Ault & Wiborg, Cincinnati; chairman of paint show committee, Walter F. Kuster, Carpenter-Morton, Everett, Mass., and chairman of program committee, Dr. Joseph Mattiello, Hilo Varnish, Brooklyn.

One of the features of the F.P.V.P.C. was an address given by John S. Shaw, manager, the safety department of Hercules Powder, on the subject of "Safety and Health Hazards." It is expected that recommendations by the Federation on the general subject of safety and health will be made in the near future.

Ernest T. Trigg. N.P.V. & L.A. in his talk before the seven hundred-odd production men attending the convention, stressed the value of the Federation devoting considerable time and effort to the nomenclature problem. Mr. Trigg suggested that a committee be formed to set up definitions of the functional operations of the employees of the various divisions of the industry. He also suggested that such a committee might well concern itself with drawing up standardized designations of different jobs so that confusion over titles might be eliminated or at least minimized.

Prize Awards

The judges evaluated the several papers for the *American Paint Journal* awards as follows:

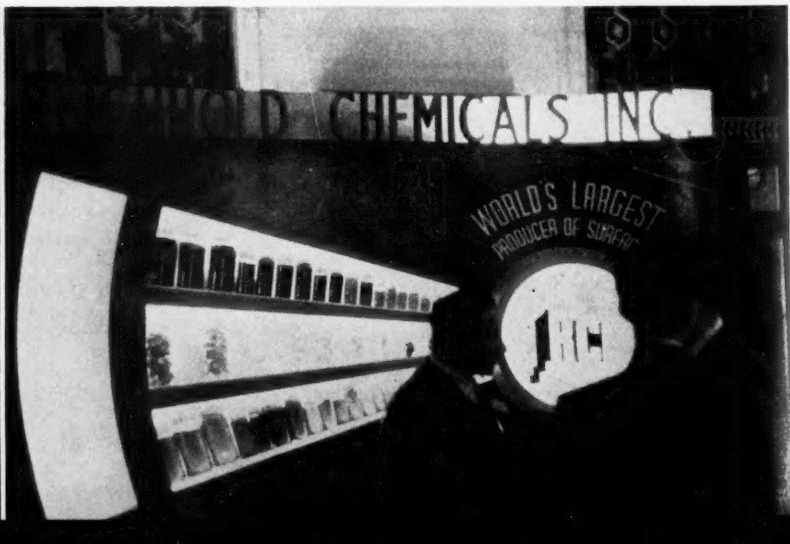
Practical group, first, "Primers for Magnesium and Aluminum Alloys," by the Golden Gate club; second, "Behavior of Certain Oil-Resin Combinations," by the Baltimore club.

Research group, first, "Quantitative Adhesion Measurement of Coating Before and After Exposure," by New York club; second, "Evaluation of Surface-Active Agents in Pigment Grinding," by the Detroit club.

The Paint Industry Magazine prizes for meritorious presentation of technical papers were awarded as follows:

First, Herbert Zimmerman, Chicago club.
Second, N. T. Phelps, Philadelphia club.
Third, H. W. Crockett, Golden Gate club.

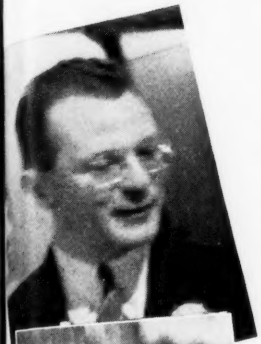
The *National Paint Bulletin* prize for the best reporting of local club meetings was awarded to David Fink, of the Baltimore club, with honorable mention for the New York club.



Paint Manufacturers

Hold Annual Convention in Washington

Above, C. A. Knauss and C. J. O'Conner, both of Reichhold Chemicals, Inc. Below, J. D. Todd, Kentucky Color and Chemical, and Robert J. Moore, Bakelite.

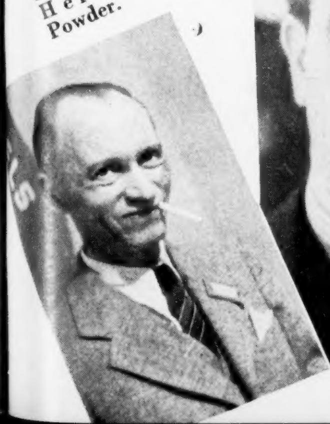


From top to bottom, Harry Burrell, Heyden Chemical; Robert J. Smith, Indianapolis Paint & Color Company and retiring president of the Federation of Paint and Varnish Production Clubs; P. L. Swisher, Reichhold Chemicals, Inc.

Did you get a carnation from this lovely lady at Stroock & Wittenberg's very attractive booth?

Directly to the right, Dr. Joseph Mattiello, Hilo Varnish, in charge of the technical program. Directly above, E. W. Freundt and Dale Stingley, both of Armour & Co.

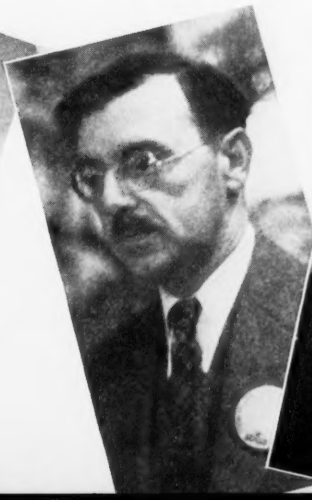
F. G. Oswald, Hercules Powder.

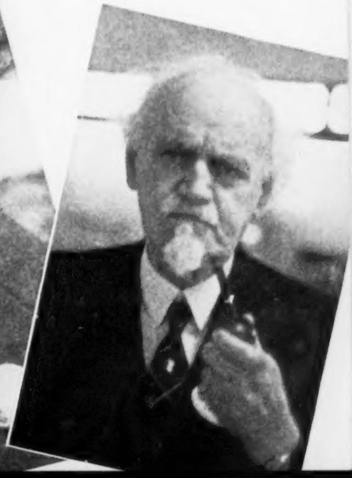


Roman L. Debes, Harmon Color Works.

"Al" Loeffler, Monsanto Chemical.

Below, F. Grant Scheicher, W. D. Wilson Printing Ink Company, and Col. James W. Kent, President, Kent Machine Works, Brooklyn, N. Y.





CHEMICAL SPECIALTY News!

New Insecticide Standards Given To Industry—Heavy Duty Floor Finish Specifications Released—New Products—Company News

REVISED standards for coal tar and cresylic disinfectants, recommended by the National Association of Insecticide and Disinfectant Manufacturers, Inc., are now being promulgated to the industry by the National Bureau of Standards. Purpose of the revision is to permit use of newly developed phenolic distillates obtained from petroleum, some of which are higher in phenol coefficient than those heretofore obtained from coal tar.

In discussing the revisions, F. W. Reynolds of the Division of Trade Standards said:

"A change in titles will be noted. Except for the change in paragraph 3 of CS70-38 to admit the petroleum phenols, no significant change is made in the requirements of that standard. Although CS71-38 has been rewritten because of a division into two groups based on phenol coefficient, the requirements of the two groups are not essentially different from the requirements of CS71-38, except admitting the phenols of petroleum origin. Lower solubility is required of Group II disinfectants, but this is compensated to some extent by the higher phenol coefficients."

A form is enclosed with copies of the specifications in which members of the industry are asked to signify their acceptance of the revisions.

Heavy Duty Specifications

New specifications for heavy duty finishes on maple, beech, and birch floors have been released by the Maple Flooring Manufacturers Association. The group certifies products which meet with their standard, a fact which may be used in advertising by manufacturers.

Certifications will be made for a period of three years on Jan. 1. Present certifications expire the end of this year. Copies of new specifications, with form for submission for examination can be obtained from the Association or from the official laboratory, Foster D. Snell, Inc., Brooklyn.

Story of Glycerin

The story of glycerin, emphasizing features having to do with the properties and uses of the commodity, highlights the current issue of *Priorities*, house organ of Prior Chemical Corp. The glycerin story is written in a style for the general reader rather than the technician.

Arnold Buys Company

Carl F. Arnold has acquired the business of Kilburn Chemical Co., Lakewood, Ohio, which makes a wide line of resurfacing agents and household chemicals. A. H. Kilburn, well known in automotive chemical circles, will continue in association with Mr. Arnold in a technical and advisory capacity.

Dixie White Organized

Dixie White Products Co., has been organized in Memphis, Tenn., for manufacture of household cleansing powder. J. Walter Cobb, Jr., Chicago, advertising agency man heads the enterprise.

New Hand Cleaner

Clean Products Co., Columbus, O., has gone into production of a new powdered hand cleaner to be marketed under the trade name "Clean." Product was developed after two years of research, and tested by actual usage in mills, shoe factories, printing plants, etc.

Buys Insecticide Branch

Insecticide Corp. of America, Medina, N. Y., has purchased the insecticide branch of National Electro Chemical Co., Boston. The New England plant will be dismantled and the machinery removed to Medina.

Smith Fully Recovered

Casper Smith, president of Smith Chemical & Color Co., Brooklyn, is back at his desk, fully recovered from a recent operation.

Glyco Branch Moves

Glyco Products Co., Inc., has moved its Philadelphia branch office to 2000 Franklin Trust Bldg., 15th and Chestnut sts. Leonard S. Levitt is sales manager and technical representative at the branch.

The San Francisco plant of Crown Products Corporation has a bottling capacity of 80 half gallon or 100 quart bottles a minute for its Sani-Clor Bleaching and Washing Fluid. Production line of the product is shown above. Bottle is sealed with a blue and white lithographed Phoenix CT Cap. Photographs were reproduced through courtesy of The Phoenix Flame, published by Phoenix Metal Cap Company. Photographer: Rodney D. Heetfield, Chicago.

Textile Chemists

Candid camera records the recent meeting of the American Association of Textile Chemists and Colorists at Hotel Commodore, New York City.

Dr. Carl Z. Draves (left), of General Dyestuff Corp., president of the group, as he read his report, and Hon. Newbold Morris (right), president of the New York City Council, as he delivered the principal address.

Charles F. Goldthwait of Mellon Institute registers interest in the dinner speaker.

Dr. Walter M. Scott, Southern Regional Research Laboratory, U. S. Department of Agriculture, attended.

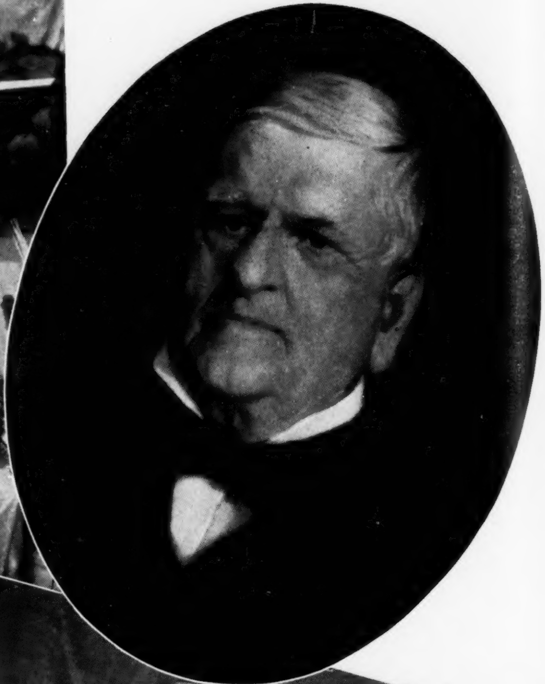
F. L. Bume, Fulton Aniline Corp., and R. Feibelmann, The Aktivin Corp., turn toward the speakers' table.

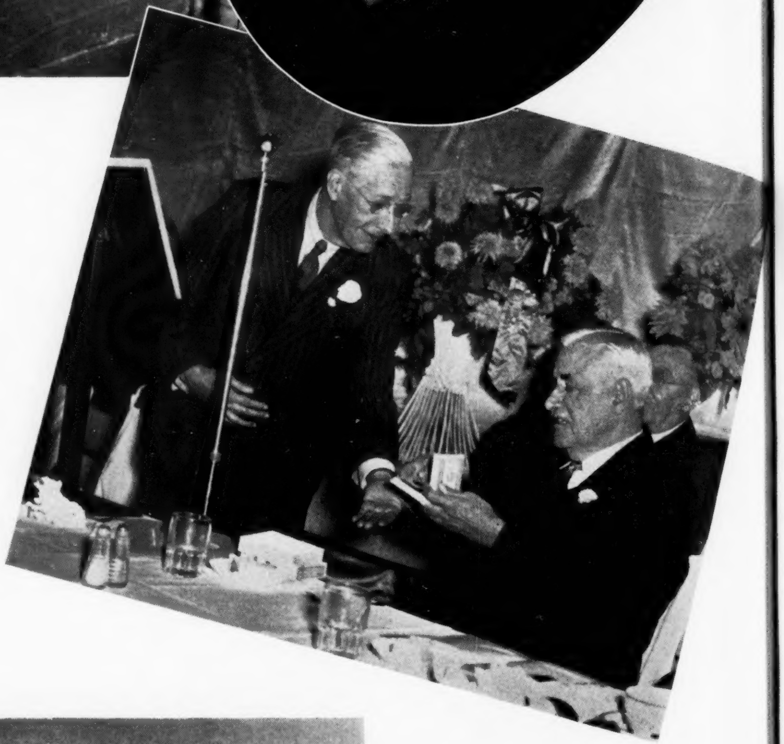
Bertil A. Ryberg, Associate Director of Research, A.A.T.C.C., relaxes after the dessert.

William Peacock, Calco Chemical Division, American Cyanamid Co., takes a moment out to rest.

G. A. Moran, Calco, and William Woosnam, D. F. Perkin & Son, Holyoke, Mass., were dinner buddies.

Clarence Nutting, Fred Spencer, and Hugh Christison, all of Arlington Knitting Mills.



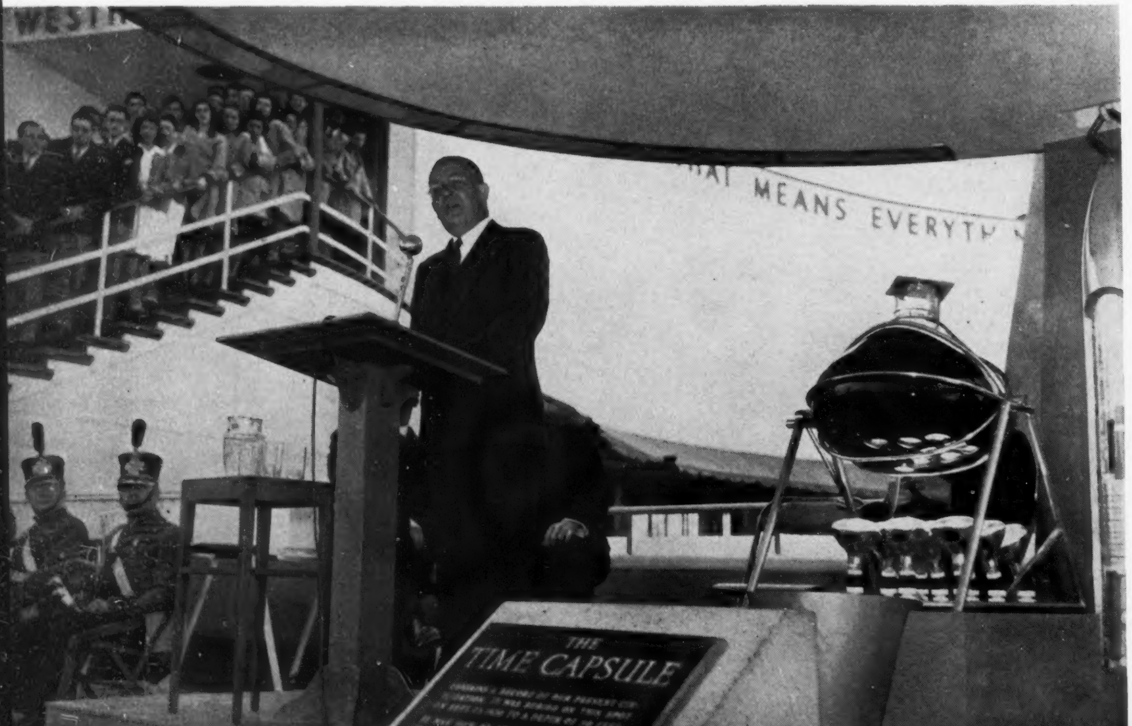


Michigan Alkali Jubilee

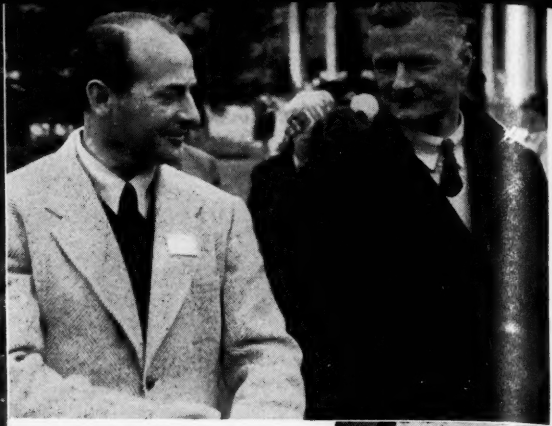
Michigan Alkali celebrated its Golden Jubilee October 17, with a banquet in honor of 567 veteran employes.

As a token of appreciation for their long service with the company, honor guests were presented with gold watches by company officials, including Emory L. Ford, president, and J. B. Ford, Jr., vice-president. In attendance at the dinner were J. B. Ford, Sr., retired president, and grandson of the late Capt. J. B. Ford (oval inset, right), founder of the company.

In photograph above, J. B. Ford, Sr., retired president, is helped to a piece of the birthday cake by J. B. Ford, Jr., vice-president. S. T. Orr, general sales manager looks on smiling. At left, E. L. Ford, president, is presenting first gift gold watch, to J. B. Ford, Sr., retired president.



Westinghouse exhibit at New York World's Fair, was scene of a solemn ceremony when "Time Capsule" containing a 10 million word account of 20th century civilization, addressed to people of A. D. 6939, was sealed. D. S. Youngholm, Westinghouse vice-president, presided at historic ceremony. A special compound of pitch (yet unnamed) was used to seal the metal cylinder in the 50-foot well for 5,000 years.

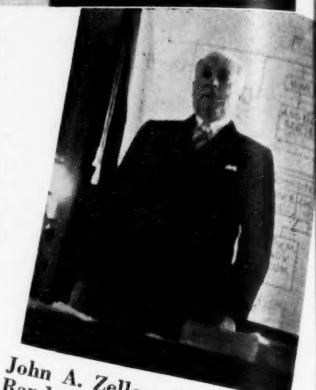


J. J. Toohy, Squibb, vice-chairman of the Section and also chairman of the Skytop meeting, and Ralph ("Doc") E. Dorland, Dow Chemical and chairman of the Section.

Edward S. Burke, president of Edward S. Burke, Inc.

Eric Rathje of Heyden Chemical and Philip M. Dinkins of Cyanamid.

Mr. and Mrs. John Chew. Mr. Chew is president of John A. Chew, Inc., New York chemical distributor.



John A. Zellers, Remington-Rand, president of the N. Y. Board of Trade, who was a guest of the Section.

AT SKYTOP

Fall Meeting, Drug, Chemical and Allied Trades Section, New York Board of Trade

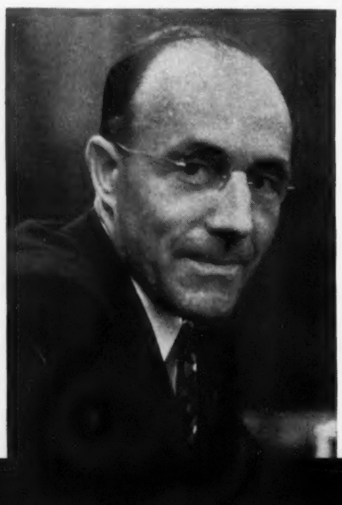
Mr. and Mrs. Rudolph Aeberle, E. M. Sergeant Pulp & Paper Co.

Left to right, Ruddy Berls, McKesson & Robbins; Mrs. Berls; V. E. Williams, Monsanto; A. A. Wasserscheid, Mallinckrodt; "Herb" Finn of Stanco; and William D. Barry, Mallinckrodt.

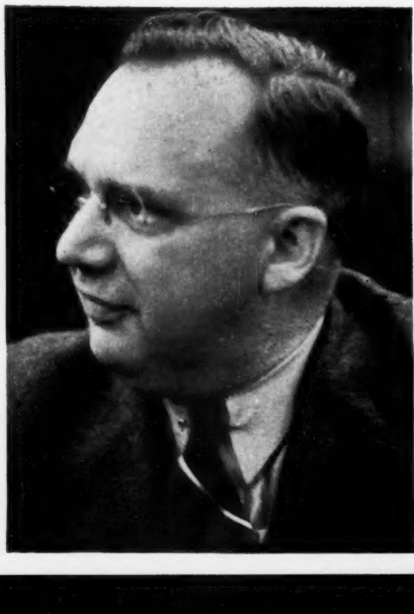
Mrs. William F. George and Mrs. Ira Vanderwater.

Joseph A. Huisking, Fritzsche Bros.

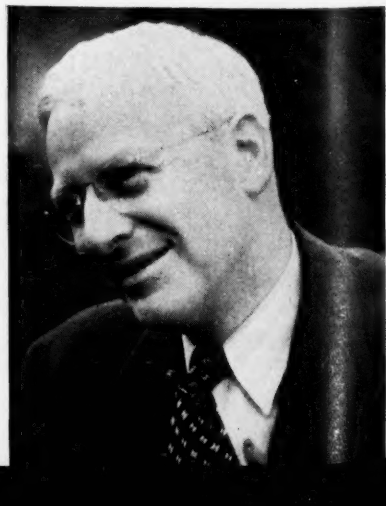
William Neuberg, Neuberg Chemical Corp.



N. H. Fyffe, Oldbury Electro-Chemical Corp.



Charles W. Frost, Prior Chemical Corp.



NEWS OF THE MONTH

GOVERNMENT

Opposes Smith Bill

MAKERS, sellers and users of industrial chemicals are alarmed at the contents of a bill just introduced in the lower house (H. R. 10607) by Congressman Smith (W. Va.), which would drastically amend an act passed during the World War I, and still on the statute books, to prohibit the manufacture, distribution, storage, use and possession in time of war of explosives.

The new bill, which has been referred to the House Committee on Mines and Mining, broadens the scope and authority of the existing act of 1917, and, what is most alarming, includes a specific list of chemicals under "ingredients" previously covered by regulations.

The list of ingredients subject to this act (which may be added to) include the following chemicals:—

Bichromates:
- Ammonium
- Potassium
- Sodium

Chlorates:
- Barium
- Potassium
- Sodium
- Strontium

Chromates:
- Ammonium
- Barium
- Calcium
- Lead
- Potassium
- Sodium

Liquid Oxygen

Nitrates
- Ammonium
- Barium
- Copper
- Ferric
- Lead
- Magnesium
- Nickel
- Potassium
- Silver
- Strontium

Nitric Acids:
- Aqua fortes
- Fuming
- Mixed acids
- Nitric acids of all grades and strengths

Perchlorates:
- Perchloric acid
- Potassium

Perborates:
- Magnesium
- Sodium
- Zinc

Permanganates
- Calcium
- Potassium
- Sodium

Peroxides:
- Barium
- Calcium
- Magnesium
- Oxon (cubes and cartridges)
- Sodium
- Zinc
- Strontium

Phosphorus

The proposed measure would regulate the manufacture, distribution, storage, use and possession of explosives and ingredients. Under Section 2 the terms "explosive" and "explosives" are defined, and also the term "ingredients"; the latter includes the chemicals specifically listed above.

There is a prohibition of the manufacture, distribution, storage, sale, etc., of explosives and ingredients except by license from the Director of the Bureau of Mines. There is an exemption of only one ounce for ingredients.

Licenses would be issued to the following:—

a. manufacturers
b. vendors
c. purchasers
d. foremen
e. exporters
f. importers
g. analysts, educators, inventors, investigators

Licenses under the proposed bill would be required to authorize the purchase, manufacture, possession, testing, and disposal of explosives and ingredients (the chemicals mentioned above).

Violations, under the proposed measure, would be punishable by a fine of not more than $5,000 or by imprisonment not more than one year or by both such fine and imprisonment.

The Director of Mines may revoke licenses. An applicant to whom a license is refused by the Director or any licensee whose license is revoked by the Director may within 30 days after notification of the rejection of his application or the revocation of his license apply to the Council of National Defense for such license or the cancellation of such revocation.

Each person licensed to sell, issue or dispose of explosives or ingredients shall keep, according to the provisions of the bill, a complete record of each person to whom they were sold or issued, showing quantity, date of sale, issuance or other disposition.

Changes From '17 Act

Opponents of the bill point out that the measure passed in 1917 was enacted during a period of war and is effective only in war times. The new measure would become operative upon issuance by the President of a proclamation declaring that there exists a state of war or a national emergency requiring the application of the provisions of the Act to provide for the national defense and security. The act passed in 1917 did not specifically mention the chemicals enumerated in the proposed amendment.

An Editorial

The chemical industry is thoroughly in sympathy with every intelligent effort of the government to prevent sabotage. But it can only view with grave apprehension and deep suspicion the proposed Smith Bill which would regulate through licenses not only the manufacture, distribution, storage, use and possession of explosives, but also an impressive list of industrial chemicals in time of war and/or whenever the president declares a state of national emergency exists.

Some 40 important chemicals are specifically mentioned as "ingredients." They are singled out because they possess oxidizing properties. Yet no chemist would agree that the materials listed in Schedule A of the bill constitute a complete list of oxidizing agents.

The Smith measure is really an attempt to amend an act passed in 1917. It was unnecessary then and is unnecessary now to mention certain chemicals such as bichromate of soda, silver nitrate sodium perborate, etc., in the act itself. This should be left in the hands of the regulatory body.

The proposed amendment in its present state is unworkable. It would be an ineffective control measure, and is a glaring example of how far war hysteria has affected the thinking of many individuals. If it is enacted it will impose unnecessary and impossible burdens upon the chemical producing, distributing and consuming industries.

How can the government force every manufacturer, seller, buyer, exporter, importer, analyst, college, and industrial laboratory to acquire a license before they can lawfully make, sell, buy, or possess MORE THAN ONE OUNCE of these chemicals without hamstringing all industry? Where will our defense program wind up?

The more important details of the proposed measure are given on this page. The measure is one of the most dangerous that has been proposed in Washington in some months. We urge every maker, buyer, seller, exporter and importer to obtain a copy of the Smith Bill (H. R. 10607) and to study carefully its provisions. Even the retail druggist is included.

The measure has been referred to the House Committee on Mines and Mining, whose chairman is Representative J. L. Smith of West Virginia and sponsor of the bill.

Chemical Industries will report when a date for hearings is announced.

Defense Plants

The drive for synthetic chemicals to go into manufacture of explosives goes on apace under government patronage.

A modern synthetic ammonia plant will be built at Muscle Shoals, Ala., by the T. V. A., for production of ammonium nitrate. Much criticism was leveled at this move. It was seen in some quarters as a chance for socialistic-minded New Dealers to furnish nitrate compounds to farmers in competition with private manufacturers.

Another mammoth producing unit for synthetic toluol was announced when Humble Oil & Refining Co., Standard Oil affiliate, was awarded a contract for construction of a $11,857,000 toluol plant at its Baytown, Tex., works.

Plans are said to be in the final stages for two synthetic nitrogen plants to be financed by government funds and operated one by Du Pont and the other by Allied Chemical & Dye.

A $6,390,000 contract was awarded to Atlas Powder Co., for operation of a TNT plant to be constructed at Weldon Springs, Mo., 20 miles northwest of St. Louis. Plant will cost approximately $15,000,000 when completed.

Aluminum Expansion

Commenting on the statement by the National Defense Commission as to increased facilities to be provided by various producers and fabricators of aluminum, Mr. Roy A. Hunt, President of the Aluminum Company of America, declared his company is expanding much more rapidly for defense purposes than it would do for normal growth. The Company has allocated more than $150,000,000 for expansion to meet defense requirements and will do its own financing. He said that it is the plan of the Company to build permanent buildings and install up-to-date equipment which can be used to whatever extent the market may require it after the present emergency has passed. Because of this highly technical nature of its manufacturing operations, construction for the most part will be done by the company's own engineering and construction organizations.

Navy Sales

The Bureau of Supplies and Accounts, Navy Department, has prepared a booklet "Selling to the Navy" which covers in detail Navy requirements and exact method to be followed in bidding on these requirements. It is issued by the U. S. Government Printing Office, Washington.

PERSONALITIES

Conway Optimistic

Carle C. Conway, board chairman, Continental Can Co., Inc., advocated the positive, rather than the negative approach to the future of industry and its problems, in an address before a luncheon group at Kansas City, Mo., recently. Said Mr. Conway: "It is the duty of industrial managements today to see how many new opportunities for profit can be evolved, not how few; how much capital can be employed, not how little; how fast we can proceed intelligently, not how slow."

Mudge On Nickel

Dr. William A. Mudge, metallurgist of The International Nickel Company, Inc., discussed "Nickel and High-Nickel Non-Ferrous Alloys—Their Manufacture, Fabrication, Properties and Uses in Welded Structures" before the Pittsburgh Section, American Welding Society on Nov. 13.

The Salesmen's Association of the American Chemical Industry will celebrate next year 20 years of activity. At the annual meeting, held at the Chemists' Club (N. Y.) October 10, these founders were present: Left to right, George A. Bode, R. & H. Chemicals Division, Du Pont; George T. Short, Wishnick-Tumpeer; Ralph E. Dorland, Dow Chemical; Frank McDonough, N. Y. Quinine & Chemical; William F. George, Chemical Industries; Adolph C. Schwartz, R. & H. Chemicals Division, Du Pont; and John A. Chew, John A. Chew, Inc.

Collyer Warns

John L. Collyer (above), president of B. F. Goodrich Company, in a recent address before the New York Sales Executives Club, warned of the "time lag" in consideration of synthetic rubber as an immediate safeguard against possible U. S. rubber shortage. It takes 18 months to engineer, construct and put one 35,000 ton synthetic rubber plant into operation. He added that "the Goodrich company believes competition should be a prime factor in government plans to create such essential standby facilities."

Coutlee On Editing

Douglas Wakefield Coutlee, director of advertising, Merck & Co., Inc., and editor of The Merck Report, discussed the problems involved in producing a specialized publication for professional men before the meeting of the Direct Mail Advertising Association in Atlantic City receintly.

Chambers Returns

Gordon H. Chambers, vice-president, Foote Mineral Co., has returned from an extended vacation to South America. Mr. Chambers visited Peru, Bolivia, Argentina, Brazil, Porto Rico and Haiti, traveling some 15,000 miles via Pan-American Airlines.

ASSOCIATIONS

Chemical Engineers

Advanced registrations for the 33rd Annual Meeting of the American Institute of Chemical Engineers at New Orleans, December 2-4, point to an exceptionally well attended meeting. Headquarters will be at the St. Charles Hotel. A special train will leave New York Saturday, Nov. 30, Pennsylvania Station at 5.10 p.m. and will arrive in New Orleans, Monday,

Dec. 2. The special train will be routed via Cincinnati, Louisville and Nashville, and reservations should be made promptly with the secretary, S. L. Tyler, 50 East 41st Street.

Among the interesting plant trips that have been arranged for, are:—Shell Petroleum, Norco, La., the Godchaux Sugar House, Reserve, La., American Sugar Refinery, New Orleans, Freeport Sulphur Co., Grande Ecaille, La., Hercules Powder Naval Stores Plant, Hattiesburg, The Masonite Plant, Laurel, Miss., and the Sweet Potato Starch Plant, Laurel, Miss.

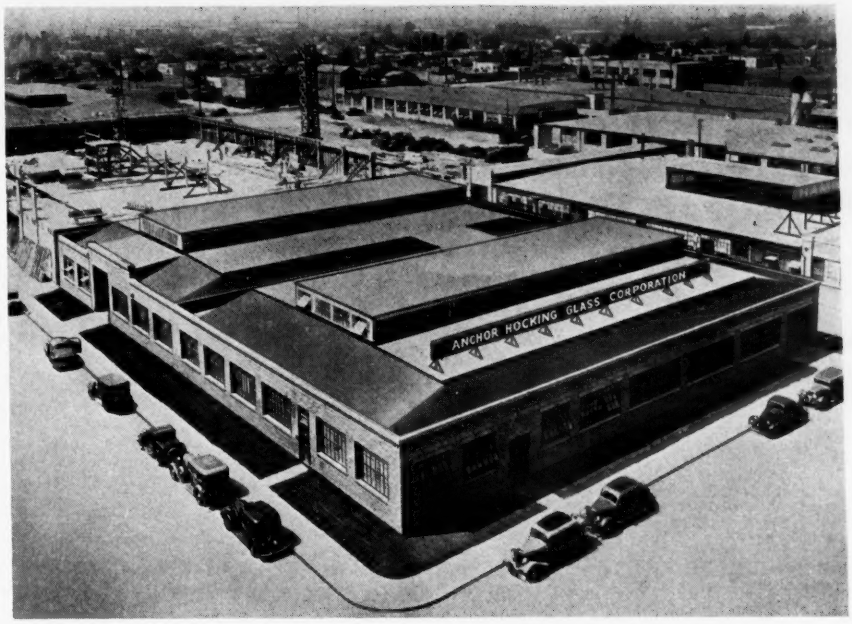
Included among the papers that will be delivered at the technical session are: "Synthetic Glycerine and Allied Products," by E. C. Williams, Shell Development Company; "Distillation Equipment in the Oil Refining Industry," by J W. Packie, Standard Oil Development Company, and "The Chemical Engineer's Stake in Free Private Enterprise," by J. W. Irwin, Assistant to the President, Monsanto Chemical.

Nichols Medal

Dr. Linus Pauling, head of the division of chemistry and chemical engineering at California Institute of Technology, and called "the outstanding theoretical chemist of the United States and probably of the world," has been awarded the 1941 William H. Nichols Medal of the New York Section of the American Chemical Society, it is announced by Professor Arthur W. Hixson of Columbia University, chairman of the medal jury.

Dr. Pauling is cited "for his distinguished and pioneer work on the application of quantum mechanics to chemistry and on the size and shape of chemical molecules." He will receive the medal at a dinner of the Section on March 7, 1941, at which time he will deliver the annual Nichols medal scientific address.

Dr. Linus Pauling



Anchor Hocking Glass Corporation, Pacific Coast Closure Division, will start manufacturing operations in its new and first Western closure factory, 4494 E. 49th Street, Los Angeles, California, about November 1st. The new factory, illustrated above, is a one-story fire-proof, brick structure, occupying a quarter of a city block. It has its own railroad siding and a loading dock for transport trucks. It is equipped with the newest and latest type of high speed, straight-line, automatic machinery for the production of Anchor metal caps.

Consulting Chemists

Mr. Bert H. White, vice-president of the Liberty Bank of Buffalo, whose chemical research activities are discussed in a feature article of this issue, led a round table discussion on the promotion of scientific and industrial research at the annual meeting of the Association of Consulting Chemists and Chemical Engineers held Oct. 22, at N. Y. City Chemists' Club.

Officers were elected as follows: President, Louis Weisberg; vice-president, John P. Hubbell; secretary, H. P. Trevithick; treasurer, Jerome Alexander. Directors elected for a three year term were: C. A. Crowley, Bernard L. Osler, and Arthur W. Thomas.

Salesmen's Association

The Nominating Committee of the Salesmen's Association of the American Chemical Industry, elected at the annual meeting Oct. 10, has submitted the following ticket for 1941: president, Walter D. Merrill, Joseph Turner & Co.; vice-president, Carl O. Lind, Dow; treasurer, Gerald S. Furman, Merck; secretary, John J. Butler, Jr., Industrial Chemical Sales.

Executive committee members were nominated for 3-year terms, as follows: Charles W. Frost, Prior Chemical; George T. Short, Wishnick-Tumpeer.

GENERAL

Dow Meeting

Two hundred representatives of The Dow Chemical Company, and their wives, from Canada, Mexico and many parts of the United States, attended a four day sales conference with company executives at the general offices in Midland, Michigan, beginning Nov. 13. Leland I. Doan, vice-president and general sales manager, presided.

Leland I. Doan

Headlining the activities of the conference was a two-day session devoted to discussion and motion pictures of the company's progress. This meeting featured plants which have recently been completed and new products which have been added to Dow's already extensive line.

Representatives and officers who discussed operations and product developments are: Dr. Willard H. Dow, president and genera' manager; Earl W. Bennett,

vice-president, secretary and treasurer; R. L. Curtis, general manager, and J. F. Smith, sales manager of Dow's Great Western Division, Pittsburgh, California; Dr. D. T. Prendergast, Iodine and Insecticide Division, Long Beach, California; Dr. Jose Polak of Dowell Sociedad Anonima, Mexico City, Mexico; N. R. Crawford, vice-president and general manager of Dowell Incorporated, Tulsa, Oklahoma; L. C. Stewart, Technical Research Department, Midland; M. E. Putnam, president, Cliffs Dow Chemical Company, Marquette, Michigan.

Climaxing the four-day program was a trip by special train to Ann Arbor for the University of Michigan-Northwestern football game.

Gray Appointed

William S. Gray & Co. has been appointed by Durez Plastics & Chemicals, Inc., No. Tonawanda, N. Y., as sales agent for surplus phenol production at its new plant described in a feature article of this issue.

Nylon Plant

Du Pont has ordered work begun at once on a second plant for the manufacture of Nylon yarn at Martinsville, Va., to cost approximately $11,000,000.

OBITUARIES

Russell Kent, 55, Washington correspondent for Chemical Industries since February, died suddenly while on his reportorial rounds in the Capitol, victim of a heart attack. Mr. Walter J. Murphy, editor of this magazine, had had lunch with Mr. Kent at the National Press Club hardly an hour before his death.

Mr. Kent had been a working newspaperman since leaving school, and at various times during his career was on the staff of such papers as the *New York Sun*, *Knoxville Journal*, *Memphis News-Scimitar*, and *New Orleans Times-Picayune*. He had been managing editor of the latter three papers.

Russell Kent

He was a past president of the National Press Club, and at the time of his death was a member of the editorial board of the *United States News*.

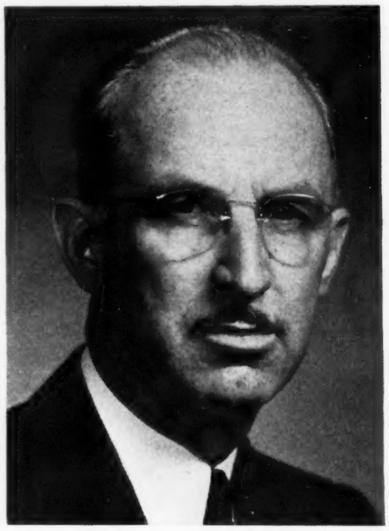
John Anderson

John Anderson, 83, chairman of the executive committee of Charles Pfizer & Co., died at his home in Brooklyn. He had been with Pfizer for sixty-seven years, having joined the company in 1873 while still a boy.

Other Deaths

Mr. Lester McNerney, president, McNerney Chemical Corp., died in Los Angeles. . . Archibald Campbell, 68, consultant chemical engineer, and former vice-president of the Globe Soap Company, died at his home in Hyde Park, near Cincinnati. . . Morris L. Slugg, 59, plant superintendent, Armour Fertilizer Works, died in Chicago.

PERSONNEL



Harvey M. Harker

Harvey M. Harker, assistant general sales manager of Monsanto's organic chemicals division leaves for Australia this month to conduct a chemical market survey of Australia, Tasmania, and New Zealand.

Oscar F. Johnson has joined the sales-staff of Reichhold Chemicals, Inc., as Chicago district manager . . . **Frank A. Decker** has been added to the textile specialties staff of Ernst Bischoff Co., Inc. . . . **Charles P. Huttrer** has become research chemist for Pyridium Corp., Yonkers, N. Y. . . . **B. W. Rogers** has been named exclusive representative Abbe Engineering and Beach-Russ Co., in northern Ohio.

Carl H. Schmidlapp has been named a director of Allied Chemical & Dye . . . **Frank Waldo** has joined the technical service department staff of Columbia Alkali as market research specialist . . . **Daniel Melnick** has been named chief chemist of Food Research Laboratories . . . **Dr. Edward Bartow,** on leave as emeritus chemistry professor, Iowa U., has joined research laboratories of Johns-Manville as chemical consultant; **Thomas D. Tervoe** has joined J-M filtration & filler sales staff as junior salesman . . . **W. S. Fernholz** has been named sales and service supervisor of Chicago territory and **L. Camel** appointed to same post in Cleveland territory by alkali division of Detroit Rex Products.

L. A. Smith was elected vice-president and treasurer, Pennsylvania Salt Manufacturing at recent board meeting; **Warner R. Over** was named secretary and assistant treasurer.

Edward A. O'Neal, Jr., manager, Monsanto's Anniston phosphate plant and **E. J. Swanson,** chief clerk; O'Neal becomes plant manager Jan. 1, Swanson eventually to become office manager . . . **Marvin S. Eavenson** heads the recently merged laundry and "H" divisions, National Oil Products . . . **O. W. Smith** has been appointed general manager, Prater Pulverizer Company . . . Other important personnel changes on "Headliners in the News" roto page.

New Chemicals for Industry

Continued from Page 567

ALUMINUM AND TIN CLEANER

A special alkaline silicate cleaner for aluminum, tin, and alloys of either. Ingredients of the new cleaner, called "Metso 88 Special," permit effective use in either hot or cold, hard or softened water. The cleaner is a free rinser. It goes into solution immediately and is completely soluble, thus eliminating the danger of cleaning material settling to the bottom of the tank. Another unique feature is that the cleaner is packed in concentrated liquid form and merely requires dilution before use. The cleaner is also used in washing machines for various purposes, and is entirely safe for cleaning by hand. Philadelphia Quartz Company.

CHRYSENE

Freezing point: 245° C. minimum. Insoluble in water. Slightly soluble in ketones, esters, acids, and aromatic hydrocarbons. Uses: In the manufacture of intermediates for dyes, in the preparation of pigments that are fluorescent in ultra-violet light, and in the synthesis of organic chemicals. Reilly Tar & Chemical Corp.

DIPHENYLENE OXIDE (DIBENZOFURAN)

Purity: 90% minimum. B. P. Approx. 286° C. Freezing point: 81.0° C. minimum. Insoluble in water. Soluble in most common organic solvents, including alcohols, ethers, ketones, esters, aliphatic and aromatic hydrocarbons, chlorinated aliphatic and aromatic hydrocarbons. Uses: In the preparation of intermediates for dyes, as a fungicide and insecticide, and in the synthesis of organic chemicals. Reilly Tar & Chemical Corp.

2,6 LUTIDINE

Purity: 98% minimum. Distillation Range: 95% shall distill within a range of 2.0° C., including the temperature of 143.8° C. Solubility: Very soluble in water, soluble in most common organic solvents, including alcohols, ethers, esters, ketones, aliphatic and aromatic hydrocarbons. Uses: Pharmaceuticals, resins, dyestuffs, rubber accelerators and insecticides. Approx. weight per gallon: 7.72-lbs. Shipping containers: 400-lbs. returnable galvanized drums, 35-lb. cans. Reilly Tar & Chemical Corp.

PARA CRESOL

Purity: 98% minimum. Distillation range: 90% shall distill within a range of 1.5° including the temperature of 202° C. Freezing point: Not less than 33.0° C. Slightly soluble in water. Soluble in most common organic solvents including alcohols, ethers, ketones, esters, aliphatic and aromatic hydrocarbons and chlorinated aliphatic and aromatic hydrocarbons. Uses: Various organic syntheses. Approx. weight per gallon: 8.66 lbs. Shipping containers: 450-lb. returnable drums, 40-lb. cans. Other grades of Reilly Para Cresol: 95% Para Cresol, 90% Para Cresol, and 75% Para Cresol. Reilly Tar & Chemical Corp.

Superchlorinating Water

The latest and most approved methods of superchlorinating water to rid it of unpleasant tastes and odors is discussed in one of the leading articles in this month's "The Pioneer," house publication of Electro Bleaching Gas Co. and Niagara Alkali Company. Another article shows and describes working models of the great Leonardo da Vinci's inventions for raising large volumes of water long before the day of power pumps.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACTS OF CONGRESS OF AUGUST 24, 1912 AND MARCH 3, 1933

Of *Chemical Industries*, published monthly except twice in October, at New Haven, Conn.

State of New York, County of New York, ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Walter J. Murphy, who, having been duly sworn according to law, deposes and says that he is the Editor of *Chemical Industries* and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in Section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Trade & Technical Papers, Inc., 522 Fifth Avenue, New York, N. Y.; Editor, Walter J. Murphy, 522 Fifth Avenue, New York, N. Y.; Managing Editor, none; Business Manager, William F. George, 522 Fifth Avenue, New York, N. Y.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent. or more of total amount of stocks. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.) Trade & Technical Papers, Inc., 522 Fifth Avenue, New York, N. Y.; Horace F. Hunter, 522 Fifth Avenue, New York, N. Y.; J. L. Frazier, 2043 Orrington Avenue, Evanston, Ill.; John R. Thompson, 309 West Jackson Blvd., Chicago, Ill.; William F. George, 216-18 Corbett Road, Bayside, L. I., N. Y.; Walter J. Murphy, 27 Van Nostrand Court, Little Neck, L. I., N. Y.; Stanley M. Huestis, 12 Overton Road, Ossining, N. Y.; Tradepress Publishing Corp., 309 West Jackson Blvd., Chicago, Ill.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent. or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the twelve months preceding the date shown above is ———. (This information is required from daily publications only.)

WALTER J. MURPHY,
Editor.

Sworn to and subscribed before me this 14th day of October, 1940. Philip Baumeister, Notary Public, Westchester County, certificate filed in New York County, Number 694, Registered 2B443. Commission expires March 30, 1942.

HEAVY CHEMICALS

Business Tops September; Continues Climb

Few Changes Reported As '41 Contract Season Starts—Most Alkalies Extended—Chlorates Scarce—Potash Production Is Expanding—Plating Items Very Good—Exports Taper Off

OCTOBER business topped September by a fair margin and November, despite the election and holiday disruptions, bids fair to maintain ascendency of the curve which began its climb just after Labor Day.

Just now, of course, the accent is on new contracts. Earliest releases contain few adjustments and best opinion is that changes will be negligible barring some hidden factor. Quarterly revision clauses, standard in most cases, will take care of such factors when and if they arise.

Contracts are being extended at the old prices on caustic, soda ash, sodium and potassium bichromates, and chromic acid. Chlorine is unchanged in single tanks and multi units of three or more. However, two units have jumped from $2.15 to $2.40, and one unit from $2.60 to $2.90. Other unchanged items include bleaching powder, caustic potash and carbonate of potash.

Chlorates Tight

While the broad list shared in the general improvement, there was an abnormal demand for chlorates, accentuated by scarcity. Sodium silicofluoride and saltcake were other materials on the tight side, although it was denied that saltcake could be classed with the scarce items. A good deal of imports figured in domestic consumption on all these items. Potash and its salts fall into this category, but production is being expanded to take up the slack, and it begins to look as though foreign factors will have to sharpen their pencils when they start sending material to these shores.

Plating chemicals experienced a nice lift, with nickel sulfate in the vanguard. This item is reported as sold up for the immediate future. Copper sulfate responded to a good export call. Oxalic was being shipped more promptly, with no surpluses available for spot buyers.

Exports Taper Off

Exports have not suffered through the spreading of the war or the natural catastrophe in Rumania. Little business was being done here for months.

Interesting sidelight on the British situation is the experience of one producer who had an exclusive sales arrangement with a London house. Material concerned is also manufactured in England. However, business has progressed normally, with the British firm having the material placed on the priority shipping list to assure space in westbound boats.

Important Price Changes

	Sept. 30	Oct. 31
ADVANCED		
Manganese Dioxide, ton	$62.50	$70.00
Sulfate, anhydrous	.09½	.10½
Saltpeter, gran., 100-lb.	7.10	7.60
Tin Tetrachloride	.24¾	.25
DECLINED		
Fluorspar, 95-98%, mines, ton	$32.60	$29.00
Barium Carbonate, Nat. Witherite, ton	45.00	43.00

South American business has tapered off, with licensing restrictions of the Exchange Control Boards in many countries tossing an occasional monkey wrench into things. The Dutch East Indies, however, are ordering large quantities of formic acid, supplies of one factor booked until January. Of course, the quantities aren't as large as that, but export allotments are made only after domestic consumers have been taken care of. Perhaps it's just as well that exports are a bit slow—so goes the feeling.

Mellon Institute Lectures

A series of 14 lectures on the present condition of the American Chemical Industry will be presented by technologic specialists of Mellon Institute of Industrial Research during 1940-1941. They will be delivered on alternate Thursdays, 11:30 a.m.-12:30 p.m., in the auditorium of the Institute.

Marshall I. Williamson, New York, in collaboration with the Package Engineers of The Hinde & Dauch Paper Co., Sandusky, Ohio, designed an entirely new package structure while planning a corrugated box to be used by distributor's salesmen in selling Nor'way Anti-Freeze. Measuring approximately 12" x 14" x 3", the package contains a radiator anti-freeze tester—which is offered free with dealer's initial order for 50 gallons or more—a small sample bottle of the Anti-Freeze, a sliding scale type calculator which enables the dealer quickly to figure the amount of anti-freeze necessary to protect against any given temperature, a wall chart, a poster, a couple of hand-out folders, a catalog page, and two order pads. Nor'way Anti-Freeze is manufactured by Commercial Solvents.

FOREIGN DIGEST

(*Continued from page 573*)

of a cheap process for the production of vinyl esters of alcohols and their oxygen derivatives. He also developed a simple and cheap synthesis of acetaldehyde, avoiding the use of expensive and short-lived catalysts. It is F's custom to publish his works in the form of monographs only after he has collected a great deal of data and is fairly sure of his conclusions.

Same journal, No. 7, p. 390.

A few of the accomplishments of the Institute of Organic Chemistry of the Academy of Sciences of the USSR for the year 1939 are listed. Favorski and Shostakovski developed a process for the synthesis of simple vinyl esters and their further derivatives. The work was conducted for the purpose of studying unsaturated compounds which can be polymerized catalytically and used as raw material in organic syntheses.

Favorski and Nazarov worked on the synthesis of polymerizable (film forming) substances on the basis of acetylene. New substances in the vinyl acetylene group were developed and addition, condensation and isomeric conversion reactions were studied for a series of acetylene and vinyl acetylene derivatives. The results are already in industrial use and promise new applications for these materials.

Balandin and Makulyan obtained styrol from ethyl benzene by dehydrogenation in the presence of a catalyst at normal pressures. The yield is up to 50 per cent. This development will be used in the plastic industry.

Shoragin, Korshak and Rafikov obtained superpolyamidic resins by condensation of adipic acid and hexamethylene diamine. The new products were used in the manufacture of a fiber similar to Nylon.

ANGEWANDTE CHEMIE, 63 No. 21-22 (1940) 221-227.

Contains a comprehensive review of progress in ceramics since 1926 by W. Funk. This article contains a very large number of references to the German literature of the period covered. In the same issue, 227-232, Alfons Schöberl has a review article on characteristic reaction possibilities of natural substances containing sulfur, including such topics as conversion to thiols; conversion to disulfides; Cystein and Cystine; Methylglyoxalese; Papain and Cathepsin; Urease; Insulin; Vassopressin and Oxytocin; Snake poisons; Albumins, etc. A very large number of literature is again included.

FINE CHEMICALS

Seasonal Products Swell General Volume

Shortage of Caffeine, Theobromine Unrelieved—Producers Cautious on Quinine Sales—Tartrates Advanced—Mercury Market Seen False—Codliver Oil Tight—Exports Good

SEASONAL items began contributing their share to the already nice demand producers of fine chemicals experienced this fall. Business was humming at a nice pace, with the short items caffeine and theobromine just where they were, and a possibility that quinine and tartrates will be just a few steps behind in the near future.

Since the Army has taken huge supplies of quinine off the market, producers are watching consumers cautiously. This is not to say that the material is scarce, but factors are not in a frame of mind to contribute to concentrations of the material in dealers' hands. So far as can be learned, the Army has offered no new commitments for quinine during October, but it is likely that the previous orders were placed for staggered shipment.

Important Price Changes

ADVANCED	Sept. 30	Oct. 31
Menthol, U.S.P., Natural	$3.40	$3.45
DECLINED		
Acid Nicotinic, lb.	$13.00	$11.00
Iodine, Resublimed	2.15	1.75
Potassium Iodide	1.45	1.20

Tartrates Increased

Prices of tartar derivatives increased, relieving suspense all around. This move had been anticipated for some time due to difficult supply situation surrounding argols. Primary source was cut off when French wineries became part of the blockade zone. Known sources in South America have been heavily leaned upon since, but it is unlikely that the full resources of this area have been tapped. New supplies probably could be found on a mutually beneficial basis. An inquiry came into this office last month from an agent interested in securing U. S. exchange. He was preparing to offer samples of argols to tartrate manufacturers for analysis.

A keen eye is being kept on the easiness in quicksilver. Domestic production is now said to have reached a point commensurate with requirements which means that for the first time since exports were cut off consumers can shop around. Previously, they were tripping over one another in a rush for available metal.

Mercurials Drop

Derivative prices surprised by slumping in sympathy with the primary market. Whether they will remain where they now are depends upon underlying demand which has been below surface since the bull market. It is well known that consumers have no inventories, and the best guess is that dealers' stocks were acquired at figures far below the present levels. This is bound to create a false market. It seems to one factor, at least, that the true price on mecury and mercurials will not be known until dealer inventories are cleaned and consumers start from scratch on American metal. From that point on, it will be supply and demand, but not until then.

Codliver oil was bought up almost to the exhaustion point during the period under review. Menthol, narcotics, salicylate, and ingredients going into winter remedies moved in their usual high seasonal volume.

Exports to South America have been contributing a nice share to the total volume. Some material is also moving to England, but the Latins have a decided advantage as far as consumption goes, according to best reports.

COAL TAR CHEMICALS

Benzol Maintains Its Improved Position

Distressed Benzol Reported Cleared From Market—Toluol Available to All Buyers—Petroleum Material Seen Confined to Explosives Field—Phenol Strong—Sentiment Bullish

BENZOL, weak sister of the coal tar derivatives, held onto its better position during October. Production slipped off slightly, although the supply situation is still overboard. Most encouraging factor is that buying is now reaching proper channels in something approaching normal demand.

Truth of the situation is that present volume—nothing to shout about—was always there, but going to holders of material bought as a premium during the salad days of toluol. It can now be reliably reported that this benzol, which holders had to dispose of at a price, has been cleared from the market with the exception of one lot too far away from consuming points to interest anyone. That, in a nutshell, is the underlying factor in benzol's improvement.

Toluol More Plentiful

Despite the heavy supply available, something approaching a basic price structure can now be maintained, inasmuch as material is in responsible hands.

Toluol, with the elimination of the export market, now is available to all buyers. Factors point out that there is no surplus, but no one is going short. Lacquer trade is taking fair volume, although there is a certain percentage of this market irrevocably lost to toluol when satisfactory substitutes were found at a price a shade under the standard material. This situation was mentioned in this department from time to time.

The present stepped up demand from lacquer people is due at least in part, to the short supply on replacement solvents.

As reported here last month, toluol situation looks like a nice balance between output and sales, with the edge probably on the production side. It is now felt that petroleum toluol when produced will find sufficient demand in the explosives field to take care of production for some time, which should leave coal tar material in something approximating its present position. For the time being, at least, the market is protected by defense program officials who have offered to take any pressing quantities off the market. So far, there has been no need to take advantage of the offer.

Xylol Improved

Xylol continued to improve during the period under review, but remains something less than a star performer. Supplies are ample. Phenol is going in its best form, due to the plastics industry which is having one of its best years.

Important Price Changes

ADVANCED

	Sept. 30	Oct. 31
None		

DECLINED

None

Intermediates are in the dyestuffs season now, and producers are going at a good pace to serve the demand. Some colors are reported scarce, with sizeable backlogs in the offing.

Sentiment throughout this branch of the trade is bullish for the coming months, although no price changes are expected.

Exports are dead at present, with England, only prospective buyer pressed for space on such vessels as are moving across. Canada is expected to need toluol for its budding munitions industry, but as reported last month, this business still looks to be some distance in the future.

Reilly Tar Exhibit

Reilly Tar & Chemical Corp. will exhibit a new series of refined coal tar chemicals at its booth at the National Chemical Exposition in Chicago. The new chemicals represent items which have never before been produced commercially in this country, according to William Higburg, general sales manager. Many of the products have never been produced commercially either in the U. S. or England.

In addition to this new series of products, other coal tar derivatives developed during the company's forty years of research in the field will be shown. These include: Meta Cresol, Para Cresol, Amino Pyridine, Amino Picoline, Beta Picoline, Gamma Picoline, 2,6-Lutidine, Quinoline, Acridine, 2-Methylnaphthalene, 1-Methylnaphthalene, Dimethyl Naphthalene, Diphenyl, Fluorene, Phenanthrene, Chrysene, Fluoranthene, Acenaphthene, Diphenyleneoxide.

Rustless Open House

Eight hundred steel executives, stainless steel fabricators, jobbers, distributors, financiers and others interested in the industry were guests of the Rustless Iron and Steel Corporation Nov. 8, in Baltimore, Md., at an open house inspection of a new $2,500,000 addition to the only manufacturing establishment in the world devoted exclusively to the production of stainless steel and employing unique processes which include every step in the manufacture of stainless steel ingots, billets, bars and wire from the virgin chrome ore to the finished product.

The event marked the completion of an expansion program inaugurated by the management in 1935 and intended for long-range accomplishment but which has been shortened to meet the requirements of a four-fold increase in market demand for the corporation's products.

Many of the visitors were guests of officers of the corporation at a dinner at the Belvedere hotel.

"Invisible" Paint Article

Paints that make warplanes "invisible," the largest rubber mill ever made in America, a new rapid drying ink process which utilizes jets of flame are discussed in articles which feature the latest issue of "Witcombings," publication of Wishnick-Tumpeer, Inc., manufacturer of chemicals, pigments, carbon black, oils, and asphalt products.

Monsanto polystyrene is the plastic used for the cover and coil of this RCA Personal Radio. The set weighs no more than a handbag and gives perfect reception. A loop antenna is concealed in the decorative cover. Molded by the Mack Molding Co.

ADVERTISEMENT—*This entire page is a paid advertisement.* *Prepared Monthly by U. S. Industrial Chemicals, Inc.*

U.S.I. CHEMICAL NEWS

November ★ A Monthly Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1940

Foundry Cores and Molds Improved by Utilizing Curbay

U.S.I. Product Widely Employed As Binder, Core Oil Substitute

Curbay Binder and Curbay X, products of U.S.I., are finding wide use in foundry practice as binders for cores and molds, it is reported.

Outstanding advantages of Curbay Binder and Curbay X, compared with such materials as molasses, are excellent mixing properties, non-fermenting characteristics, and economy.

Increases Surface Hardness

Foundry engineers report that Curbay Binder can be used very satisfactorily for spraying molds or cores to increase surface hardness. A solution of 1 part of Curbay Binder in from 10 to 20 parts of water by volume is suggested. Curbay Binder may also

(Continued on next page)

Recommendations for the safe handling of nitrocellulose are contained in a recently issued sheet. U.S.I. will gladly refer readers to a source from which copies may be obtained.

Oilproofs Containers With Aid of Alcohol

CLEVELAND, Ohio—How paper containers can be made resistant to highly penetrating liquids, such as petroleum, is revealed in a patent granted to an inventor here.

The oilproofing is accomplished, according to the inventor, by a composition consisting of oxidized abietic acid, castor oil, and denatured alcohol. The alcohol, it is said, acts to thin the composition to a consistency suitable for application.

It is claimed that the composition can be applied to such materials as chip board or kraft, and that by varying the proportions it can be employed as a surface coating or for impregnation of the container.

Suggest Alcohol Mixtures to Vary Manila Resin Viscosity

BROOKLYN, N. Y.—The viscosity of Manila resin solutions can be varied satisfactorily by the use of alcohols higher in the aliphatic series than ethyl alcohol, it has been reported here by the American Gum Importers Association.

Solutions of Manila resins in butyl or amyl alcohol have higher viscosities than ethyl alcohol solutions, it is said. By employing mixtures of different alcohols, the desired viscosity can be obtained, it is reported.

Butyl Alcohol and Amyl Alcohol are produced by U.S.I.

Report Adequate Toluene Supply

WASHINGTON, D. C.—Adequate supplies of toluene to meet the needs of the paint and lacquer industry can be provided by recovery from by-product coke ovens, it is announced in a recent report of the National Defense Advisory Commission. It is expected that military requirements can be met by producing toluene from petroleum.

Natural Resin Shipments Remain Unaffected by Conditions Abroad

Gums from Congo and Dutch East Indies Available in Quantity At Price Levels That Are Expected to Stimulate Increased Use

Ample quantities of natural resins are available both in the United States and in primary markets, and prices are being maintained at low levels, Chemical News has learned from Mr. A. J. Wittenberg, of Stroock & Wittenberg.

The outlook is favorable for the continued shipment of gums from the Far East and Central Africa in sufficient quantities to meet the requirements of American industry, Mr. Wittenberg said.

Although the normal shipment of Congo gum to the United States by way of Antwerp has been interrupted by the invasion of Holland, arrangements have been made for direct shipment from Africa, it is reported. Congo gum is probably the most important natural resin for use in oleo-resinous varnishes of all types. It was formerly roughly cleaned in Africa and then exported to Antwerp for additional cleaning and sorting. At the present time, gum of excellent quality is being shipped from Africa to this country. This gum, it is reported, is satisfactorily cleaned and is roughly assorted as to color. Prices for Congo gum have not advanced, and the material is available in quantity.

Situation in Dutch East Indies

The Dutch East Indies represent America's chief source of spirit-soluble natural gums and Damars, as well as of some of the harder types for oleo-resinous varnishes. While a sharp advance in the prices of these gums occurred shortly after the outbreak of the war, prices have since declined, until today they are at a lower level than at any time in the past five years. Current prices appear sufficiently low to stimulate a further increase in the use of these natural gums, and no shortage of material has been experienced.

It is believed that the outlook for future shipments is equally favorable. It is expected that every effort will be made to keep open the shipping lanes to the Dutch East Indies, since these lanes are also essential to the shipment of such strategic raw materials as tin and rubber from the nearby Malay Peninsula.

Novel Uses Possible For Diethyl Carbonate

Unique among lacquer solvents because of its extremely low acidity, Diethyl Carbonate offers interesting possibilities for the formulation of special-purpose lacquers. A medium boiling nitrocellulose solvent of mild odor and high stability, it contains only the merest trace of acidity, and is considered to be as nearly neutral as it is possible to make a solvent. An outstanding use is in the manufacture of lacquers for radio tube cathodes.

U.S.I., the sole domestic producer of Diethyl Carbonate, will gladly furnish additional information on its properties.

Disperse Titanium Pigments In Alcohol with Tannic Acid

METUCHEN, N. J.—That homogeneous dispersions of titanium pigments in alcohols and ketones can be prepared by using tannic acid compositions as dispersing agents is claimed in a patent granted to two inventors here.

Dispersions of this type, it is reported, are useful in the manufacture of quick-drying inks, shoe polishes, and similar compositions. The method, it is claimed, permits the formation of suspensions in ethyl alcohol, acetone, and other organic liquids. Only small quantities of the dispersing agent are required.

Ethyl Alcohol and Acetone are produced by U.S.I.

***Left:* Native gum collectors carrying baskets of gum. Each basket contains about 140 pounds of gum. *Right:* Sorting Damar gum.**

November ★ **U.S.I. CHEMICAL NEWS** ★ 1940

Claim Many Uses for Water-Soluble Ethers Of Alpha Cellulose

PHILADELPHIA, Pa. — Wide industrial usefulness is claimed for water-soluble ethers of alpha cellulose, described in a patent issued jointly to inventors here and at Moorestown, N. J. The ethers, it is said, are prepared by a process that results in a low degree of alkylation, and have many advantages.

In preparing these ethers, it is said, the alpha cellulose is dissolved in an aqueous solution of a quaternary ammonium hydroxide and treated with a suitable ethylating or methylating agent. After the reaction is complete, the mixture is diluted with water and the hydroxide neutralized. The ethers are then precipitated by adding ethyl alcohol or acetone.

The ethers, it is reported, contain from 0.6 to 1.0 alkoxy group for each $C_6H_{10}0_5$ unit, are more soluble in water, and produce solutions of higher viscosity than previous types. Applications suggested by the inventors include: thickening agents in textile printing pastes; sizes or finishes for rayon, cotton, and paper; emulsifying and dispersing agents; spreading agents in insect sprays; water vehicle paints; permanent wave preparations.

A handy conversion table for 190 proof alcohol lists volumes from 1 to 128 ounces, together with the equivalents in cubic centimeters and the decimal equivalents in wine and proof gallons. For a free copy of this table, write U.S.I. and ask for Bulletin DE.

Curbay in Foundry Practice

(*Continued from previous page*)

be used as a binder for wet blacking and other types of mold and core wash, it is reported. In this case it is suggested that the dry material be mixed with a solution of 1 part of Curbay Binder in 10 to 20 parts of water by volume.

Curbay X (Curbay Binder in dry form) may be used in sands for either air-dried or oven-dried cores and molds, it is also said. The proportions of Curbay X used range from ½ to 3%, depending on the sand and other factors.

Either Curbay Binder or Curbay X may also be used as a partial substitute for core oil in quantities depending on individual conditions.

U.S.I. will gladly give further information on the use of Curbay Binder and Curbay X in foundry practice.

Reports Coating Resists Salt Water and Gasoline

BROOKLYN, N. Y.—That metals can be protected against the corrosive action of gasoline, salt water, and steam by a new paint-like coating is claimed in a patent granted to an inventor here.

Essential components of the coating are fowl gall, a varnish, a glycol, an alcohol, and a siccative, according to the patent. Suggested proportions for a typical formulation are:

	Gallons
Synthetic varnish	40
Ethylene glycol monoethyl ether	5
Fowl gall	½
Alcohol	2
Cobalt driers	1

Pigments and fillers are added to this composition. The resulting coating, the inventor claims, is especially applicable to seagoing tankers, where the metal must be protected from the alternative effects of gasoline and salt water. It is said that contact with gasoline will not dissolve the coating.

New Mechanical Closure Can Be Hermetically Resealed

BELLWOOD, Ill.—A new style container for the packaging of paints, oils, inks, glues, food, and many other products has been announced by a manufacturer here. An outstanding advantage of the container, it is claimed, is a mechanical closure that permits easy opening, and can be hermetically resealed as often as desired. It is said that there are no protruding parts to interfere with stacking of [illegible] closure is now available, according to the manufacturer, on containers ranging from 2½ to 7 gallons. Additional sizes are expected to be available later.

Gives Anti-Mold Varnish Formula

A varnish for protecting books and other objects from mold in warm, moist climates is said to have the following proportions:

Turpentine	105 cc.
Castor Oil	56 cc.
Ethyl Alcohol	840 cc.
Shellac	217 gr.
Camphor	35 gr.
Mercury Bichloride	2.1 gr.

The finely ground shellac is dissolved in about 500 cc. of the alcohol at room temperature. The castor oil is dissolved in the turpentine and added to the shellac solution. The mixture is allowed to stand overnight and then filtered. The camphor and bichloride are dissolved in the remainder of the alcohol and added to the filtrate.

TECHNICAL DEVELOPMENTS

Further information on these items may be obtained by writing to U.S.I.

A steam treatment system is said to have the two-fold effect of creating an alkaline condition that reduces corrosion and of cleaning out existing rust deposits. It is said that the treatment employs a liquid that volatilizes and condenses with the steam, maintaining an alkaline condition in all parts of the system. **(No. 390)**

U S I

An anti-skinning agent is described as odorless, colorless, volatile. Maker says that it does not darken the coating, is retained only until coating is applied, when it evaporates quickly. **(No. 391)**

U S I

A plastic molding material is said to be completely impervious to fresh or salt water, gasoline, oils, greases, and electrolytic action. **(No. 392)**

U S I

Extinguishing equipment is reported to be especially suitable for protection against fires in highly inflammable liquids. It is said to convert water into a dense fog that smothers fire. Equipment can be installed in form of permanent heads on pipe line, maker announces. **(No. 393)**

U S I

A laboratory mixer is said to be suitable for small batches of such materials as paint, plastics, rubber, asphalt. Rotors and chamber are jacketed for heating or cooling, it is reported. Speeds range from 81 to 242 R.P.M., it is claimed. **(No. 394)**

U S I

A liquid dispenser for inflammable or explosive liquids is sealed by a cap connected to an operating handle, it is said. Vapor pressure within the container is reported to open the cover to allow escape of vapor, after which cover closes again. **(No. 395)**

U S I

Constant-temperature equipment for a wide variety of laboratory uses is described in a recently issued circular, which is said to be available on request from the manufacturer of the equipment. **(No. 396)**

U S I

A spray booth coating can be easily applied with a spray gun, it is reported. Maker says that the coating is non-inflammable, non-toxic, harmless to the skin, allows waste paint to be peeled off easily. **(No. 397)**

U S I

An all-purpose cleaner is said to dissolve grease and film and remove dirt from metal, tile, porcelain, painted surfaces, or varnished floors. Maker says that synthetic solvents employed act as antiseptic and deodorant. **(No. 398)**

U S I

Antioxidant compositions especially suitable for stabilizing hydrocarbons of the type derived from petroleum may be extracted from redwood, according to a recent patent. It is claimed that the antioxidant compositions are substantially non-toxic. **(No. 399)**

SOLVENTS

Price Rise Seen Likely Next Year

Capacity Demand Expected To Hold Through Winter—Production Being Expanded—Petroleum Solvents Brisk—Japan, Canada in Export Market—South American Imports Restricted

THERE is every likelihood of an upward revision of prices when contracts are announced for next year on most solvents. Volume has been running so heavy during the past month that some factors are shipping from production, and plans for moderate expansion of production are being carried out by producers. Present capacity demand is expected to hold throughout the winter.

Despite possible firming of prices in the near future, it is hard to see how much covering can be done beforehand by consumers. It may be, of course that there is some inventory buying in the swelled volume of the past two months. However, in view of the broadened market, this is discounted as a probability in most informed quarters.

Petroleums Hold Own

Petroleum solvents which were aided by the shortage of toluol some months back seem to be holding onto the major portion of this volume now that the coal tar item is in better supply. In fact, some of this business is reverting back to toluol because the replacement items are not being produced in sufficient quantities to satisfy recently enlarged requirements.

Smokeless powder has helped ethyl alcohol, while lacquer, paint and varnish trades are calling for large scale deliveries of general solvents. Acetone is in excellent demand, with shipments running close to production.

Exports have bowed out as a factor in the market, but this is no hardship on producers in view of the domestic business.

Japan Ordering

Some export inquiry has come from Japan, for butyls and acetone. Canada also has shown a livelier interest in the market. It isn't expected, however, that this situation will come to a point where "scalpers" will be back in the picture. No premiums have been offered as yet, nor does there seem to be any inclination to do business with dealers.

South America is still restricted in its imports due to the activities of the Exchange Control Board. An agent of one producer wrote from Argentina: "From a business point of view, the situation I found upon arrival does not seem to promise anything for the immediate future. The Exchange Control Board has banned imports from the United States except for material which it classifies as raw materials necessary to industry, which cannot be produced domestically, and which cannot be obtained from any other source."

Important Price Changes

ADVANCED

	Sept. 30	Oct. 31
Alcohol, ethyl, 190 proof	$5.92½	$5.93½

DECLINED

None

The "other source" no doubt refers to the United Kingdom which has long been on a preferred basis with South America, due to its large purchases of beef. However, inasmuch as England is not producing solvents in quantities sufficient to allow any to leave the country, some import licenses have been approved.

Exhibits Nitroparaffins

Commercial Solvents Corporation will exhibit a group of organic chemicals made commercially for the first time in 1940 at its booth at the National Chemical Exposition in Chicago. The new compounds include the four nitroparaffins—nitromethane, nitroethane, 1-nitropropane, and 2-nitropropane—and twelve nitroparaffin derivatives, of which five are nitrohydroxy compounds, five aminohydroxy compounds, and two salts of hydroxylamine.

The four nitroparaffins, or NP's, have already found many interesting applications in the industrial coatings field as solvents for cellulose acetate, cellulose mixed esters, waxes, and for vinyl and alkyd resins. Just as important as their solvent uses are the almost innumerable chemical reactions which the NP's will readily undergo, thus opening the way to a large and entirely new field of organic synthesis.

The twelve nitroparaffin derivatives are just as interesting chemically as the nitroparaffins themselves, while hydroxylammonium salts are attracting much attention since they make hydroxylamine available at a much lower price than before.

PIGMENTS AND FILLERS

Trade Feels End of Outdoor Season

Defense Work Soon To Begin Will Affect Entire Range of Coatings—Some Fear for Private Building—Zinc Oxides Continue Good—Carbon Black Gains—Dry White Lead Advanced

BUSINESS which started at a whirlwind pace leveled off somewhat as October's days ran out. It is felt in most quarters that this is just a lull between wind up of the outdoor painting season which furnished surprisingly good volume, and the beginning of defense orders. Unquestionably this business should appear shortly, covering the entire range of coatings.

An interesting angle on defense work was expressed at recent paint convention where it was felt among some factors that Army building on a major scale would slow up private work. It was felt in other circles, however, that this is looking pretty far forward. There is naturally a good chance that this result doesn't necessarily follow.

Coatings for the housing program, while formidable, are only one factor in the expected rush of defense orders. Equipment of all kinds will require finishes into which pigments will be poured in what shapes up like unprecedented peacetime quantities. One of the major items will be tires which should boost carbon black sales considerably.

Price rise on zinc oxides failed to halt the heavy demand, and with titaniums, they featured the buying side. Carbon black showed a gain over September volume, but production was still outstripping sales as October closed.

Important Price Changes

ADVANCED

	Sept. 30	Oct. 31
Casein, dom. lb.	$0.11¼	$0.12
Lead, red, dry, 95% Pb_2O_4	.07¾	.07¼
White, dry	.07¼	.07½
Litharge	.06¾	.07¼

DECLINED

	Sept. 30	Oct. 31
Zinc, yellow	$0.18	$0.16
Mercury Oxide, red	3.11	2.81
Mercury Oxide, yellow	2.96	2.66

Dry white lead yielded to pressure of an insistent upward surge in the primary market. This is not expected to interfere with demand. Colors turned sluggish after sharing in the earlier activity.

Casein was helped noticeably by lack of shipping facilities from Argentina. Domestic material found a demand that was considered "lively" in some quarters. Production is low which adds strength to the current picture. However, there are some fingers that remain crossed.

RAW MATERIALS

Firm Undertone Seen Indicating Price Rise

Raid On Teaseed As Olive Oil Substitute Boosts Price 5c—Buying On Very Close Basis—Dehydrated Castor Gets Attention—Drying Oils Firm—Shellac Surprises—Turpentine High

SUCH business as there was, covered replacements only during October, notwithstanding the ticklish supply situation surrounding most of the imported oils. Buyers seem to be giving much thought to finding substitutes. Following a "raid" on teaseed as an olive oil substitute, the price jumped 5c and stocks were cleaned within four weeks. Some business was then switched to rapeseed. But there are no untapped wells of any important oils around at present, which indicates that there is a possibility of prices moving slightly upward.

There was enough business around to keep prices firm. The undertone was strong, however. No inventories are being kept by consumers, and they seem content to come into the market for a bucketful at a time. Most of this is price conflict. Buyers are reported to have slightly different ideas than sellers, and until better volume comes into the market, it looks like a battle of wills rather than of supply and demand.

"Blitzkrieg" Buying

It was reported here last month that current opinion discounted teaseed as an olive oil substitute. However, the "blitzkrieg" buying which cleaned the market within a month was a surprise to many.

Drying oils held firmly at previous levels. Dehydrated castor came in for some nice business as a substitute oil. Chinawood maintained its price structure because supplies are concentrated in a single source, for the most part, thus control is comparatively easy. Little business is passing. The same can be said for perilla and oiticica.

Reports of smaller crop estimates have helped soybean millers. Prices were fractionally better. Contract shipments moved out steadily, and inquiry was more active.

Market at Crossroads

All in all, best opinion holds that this market is at the crossroads. The waiting period cannot last much longer, and when consumers get over the feeling that they have the market in their pockets, a small but general rise can be looked for.

Shellac which was easy, almost to the breaking point, in September, recovered phenomenally on reports of a 50 per cent. drop in Calcutta production. This cut which easily makes up for the markets cut off by the war is abetted by the fact that U. S. defense needs will probably raise domestic consumption. Prices rose fractionally here.

Important Price Changes

ADVANCED	Sept. 30	Oct. 31
Oil, Chinawood	\$0.26¼	\$0.26¾
Neatsfoot	.15¼	.15½
Olive, denat.	1.80	2.10
Palm, Niger	.03¼	.03¾
Perilla	.17⅛	.18
Teaseed, crude	.13½	.16
Rosin gums, general increases for various grades		
Turpentine, Spirits, gum	.36¾	.44¾
Wax, Carnauba, No. 3, chalky	.57	.59
DECLINED		
Oil, Castor, dehydrated	\$0.136	\$0.131
Cottonseed, cooking	.07½	.07¼
Peanut, crude, dom.	.05¼	.04¾

Waxes had an upward tendency, and maintained rises on an expanding market. Stocks were reported as moderate.

Naval Stores

All naval stores, including oleoresin, turpentine, and rosin, will be traded in at the Savannah Exchange, regardless of production area. Certain spot markets will be shown on the board giving receipts, offerings, sales, stocks and prices at which sales are made on each trading day. Thus, it will be possible to bid on any commodity at Savannah.

The outlook for turpentine is extremely favorable, with price at its highest level since the 1937-38 season. A recent actual check of stocks at Savannah revealed 3,021 barrels less than previously reported.

There is no doubt that surplus C. C. C. stores will find their way into the market shortly. However, due to the huge defense construction program, it is believed that prices will be maintained at close to their present levels for the immediate future at least. Rosin has evidenced a firming tendency despite the huge stocks on hand and slight interest among buyers. This is traceable to the fact that all eligible rosin is being placed under loans, which run higher than the current market.

U. S. Stoneware Expands

The United States Stoneware Co., Tallmadge, O., has begun an expansion program which will completely replace previous facilities with an increase in capacity of 50 per cent. Program includes a new plant for production of "Tygon" company's new synthetic rubber-like material, a new laboratory building, and an addition to its Raschig Ring and small Tower Packing plant at Ravenna, Ohio.

AGRICULTURAL CHEMICALS

Lack of Imports Helps Organic Material

Curtailed Slaughter in South America Seen As Factor—Some Mixing Operations Begun—Menhaden Scrap Sold Up—Ammonia Sulfate Still Scarce—Potash Production Expanding

MAJOR interest in this market revolved around organic material which experienced a good demand during October. Prices recovered somewhat when imported material turned scarce. There is a possibility of a moderate rise in this group during the coming season due to lower imports. As was pointed out here last month, South American slaughter has been sharply curtailed due to lack of European markets for Latin beef.

While the shipping season is not yet under way, some mixers have been operating which stepped up activity during the period under review. It is expected that with many items on the scarce side that there will be a heavy early demand to cover requirements for a bit into the future.

Fish scrap was a sought after item, with Menhaden reported sold up on contracts.

Sulfate of ammonia continues to be shipped from production. There is a heavy demand for spot export material, without even the dimmest chance of getting any. However, in the language of one producer, "You can't blame the boys for trying."

Important Price Changes

ADVANCED	Sept. 30	Oct. 31
Cottonseed Meal, 8%	\$23.50	\$26.50
Fish Scrap, Menhaden, unit-ton	3.25	3.35
Sodium Nitrate, crude	29.00	29.40
DECLINED		
None		

Nitrate of soda was without feature, the shipping season having not yet begun.

Potash salts remain in good demand, with reports that certain consumers are encountering difficulty in obtaining spot material for current requirements. Production is being expanded slowly, however, and no ultimate shortage of the material is expected, although there may be a pinch here and there for the time being.

Heavy Chemicals, Coal-Tar Products, Dye-and-Tanstuffs, Colors and Pigments, Fillers and Sizes, Fertilizer and Insecticide Materials, Petroleum Solvents and Chemicals, Naval Stores, Fats and Oils, etc.

PRICES CURRENT

Chemical prices quoted are of American manufacturers for spot New York, immediate shipment, unless otherwise specified. Products sold f.o.b. works are specified as such. Import chemicals are so designated.

Oils are quoted spot New York, ex-dock. Quotations f.o.b. mills, or for spot goods at the Pacific Coast are so designated.

Raw materials are quoted New York, f.o.b., or ex-dock. Materials sold f.o.b. works or delivered are so designated.

The current range is not "bid and asked," but are prices from different sellers, based on varying grades or quantities or both.

Purchasing Power of the Dollar: 1926 Average—$1.00 - 1939 Average $1.24 - Jan. 1940 $1.17 - Oct. 1940 $1.20

	Current Market		1940 Low	1940 High	1939 Low	1939 High
Acetaldehyde, drs, c-l, wks lb.	...	.11	...	.11	.10	.14
Acetaldol, 95%, 55 gal drs wks lb.	.11	.12	.11	.25	.21	.25
Acetamide, tech, lcl, kgs lb.	.28	.30	.28	.50	.28	.50
Acetanilid, tech, 150 lb bbls lb.	...	.27	...	.27	.22	.29
Acetic Anhydride, drs, f.o.b. wks, frt all'd lb.	.10½	.11½	.10½	.11½	.10½	.11
Acetin, tech, drs lb.	...	.33	...	.33	...	.33
Acetone, tks, f.o.b. wks, frt all'd lb.	...	.05	.05	.06	.04¼	.06
drs, c-l, f.o.b. wks, frt all'd lb.	. .	.06½	.06½	.07½	.05¾	.07¼
Acetyl chloride, 100 lb cbys lb	.55	.68	.55	.68	.55	.68
ACIDS						
Acetic, 28%, 400 lb bbls, c-l, wks 100 lbs.	...	2.23	...	2.23	...	2.23
glacial, bbls, c-l, wks 100 lbs.	...	7.62	...	7.62	...	7.62
glacial, USP bbls, c-l, wks 100 lbs.	...	10.25	...	10.25	...	10.25
Acetic Acid Glacial, *Synthetic* 99.5%, cbys, cases, delv lb.	...	.0918	...	...	...	...
99.5%, 110-gal dr, delv lb.	...	.0843	...	...	...	...
USP XI, cases, cbys, delv lb.	...	.11	...	...	...	...
USP XI, 110-gal drs, delv lb.	.10¼	.11	...	...	...	...
CP, cases, cbys, delv lb.	.13½	.14	...	...	...	...
CP, 55-gal drs, delv lb.	.13¼	.13½	...	...	...	...
Acetylsalicylic, USP, 225 lb. bbls lb.	...	.45	...	.45	.40	.50
Adipic, kgs, bbls lb.	...	.31	.31	.72	...	.72
Anthranilic, ref'd, bbls lb.	1.15	1.20	1.15	1.20	1.15	1.20
tech bbls lb.	.	.75	...	.75	...	.75
Ascorbic, bot oz.	2.00	2.05	2.25	3.00	2.75	3.25
Battery, cbys, wks 100 lbs.	1.60	2.55	1.60	2.55	1.60	2.55
Benzoic, tech, 100 lb kgs lb.	43	.47	.43	.47	.43	.47
USP, 100 lb kgs lb.	.54	.59	.54	.59	.54	.59
Boric, tech, gran, 80 tons, bgs, delv ton *a*	93.50	96.00	...	96.00	...	96.00
Broenner's, bbls lb.		1.11	...	1.11	...	1.11
Butyric, edible, c-l, wks, cbys lb.	1.20	1.30	1.20	1.30	1.20	1.30
synthetic, c-l, drs, wks lb.	...	.22	...	.22	...	.22
wks, lcl lb.	...	.23	...	.23	...	.23
tks, wks lb.	. .	.21	...	.21	...	.21
Caproic, normal, drs lb.	.30	.35	.35	.40	...	.35
Chicago, bbls lb.	.	2.10	...	2.10	...	2.10
Chlorosulfonic, 1500 lb drs. wks lb.	.03½	.05	.03½	.05	.03½	.05
Chromic, 99¾%, drs, delv lb.	15¼	.17¼	.15¼	.17¼	.15¼	.17¼
Citric, USP, crys, 230 lb bbls. lb. *b*	.20	.21	.20	.21½	.20	.22½
anhyd, gran bbls lb. *b*	.	.23	...	.23	.23	.25
Cleve's, 250 lb bbls lb.	.	.57	...	.57	...	.57
Cresylic, 99%, straw, HB, drs, wks, frt equal gal.	.68	.70	.68	.70	.49	.70
99%, straw, LB, drs, wks, frt equal gal.	.68	.75	.68	.75	.55	.75
resin grade, drs, wks, frt equal lb.	.08¾	.09¾	.08¾	.09¾	.08¼	.09¾
Crotonic, bbls, delv lb.	.21	.50	.21	.50	.21	.50
Formic, tech, 140 lb drs lb.	.10½	.11½	.10½	.11½	.10½	.11½
Fumaric, bbls lb.	.24	.28	.24	.75	...	.75
Fuming, see Sulfuric (Oleum)						
Gallic, tech, bbls lb.	.90	.93	.75	.93	.70	.73
USP, bbls lb.	.92	.95	.92	.95	.77	.81
H, 225 lb bbls, wks lb.	...	.45		.45	.50	.55
Hydriodic, USP 47% lb.	...	2.42	2.30	2.42	...	2.30
Hydrobromic, 34% conct 155 lb cbys, wks lb.	.35	...	.35	.44	.42	.44
Hydrochloric, see muriatic						
Hydrofluoric, 30%, 400 lb bbls, wks lb.	.06	.06½	.06	.06½	.06	.07½
Hydrofluosilicic, 35%, 400 bbls, wks lb.	.09	.09¼	.09	.09½	.09	.09½
Lactic, 22%, dark, 500 lb bbls lb.	.02½	.03¼	.02½	.03¼	.02½	.02¾
22%, light ref'd, bbls lb.	.03½	.04¾	.03½	.04¾	.03½	.03¾
44%, light, 500 lb bbls lb.	.05½	.06¾	.05½	.06¾	.05½	.05¾
44%, dark, 500 lb bbls lb.	.06½	.07¾	.06½	.07¾	.06½	.06¾
50%, water white, 500 lb bbls lb.	.10½	.11½	.10½	.11½	.10½	.11½
Lauric, drs lb.	.11½	.12	.12½	.14½	.11¾	.12¼
Laurent's, 250 lb bbls lb.	...	.45	.45	.46	.45	.46
Maleic, powd, kgs lb.	.	.30	.30	.40	.30	.40
Malic, powd, kgs lb.		.47	...	.47	.45	.60
Mixed, tks, wks N unit	.05	.06	.05	.07¼	.06½	.07¼
S unit	.0085	.009	.008	.009	.008	.009
Monochloracetic, tech, bbls lb.	.15	.18	.15	.18	.16	.18
Monosulfonic, bbls lb.	.	1.50	1.50	1.60	1.50	1.60

a Powdered boric acid $5 a ton higher in each case; USP $15 higher; *b* Powdered citric is ½c higher; kegs are in each case ½c higher than bbls; y Price given is per gal.

	Current Market		1940 Low	1940 High	1939 Low	1939 High
Muriatic, 18°, 120 lb cbys, c-l, wks 100 lb.	...	1.50	..	1.50	...	1.50
tks, wks 100 lb.	...	1.05	1.00	1.05	...	1.00
20°, cbys, c-l, wks 100 lb.	...	1.75	...	1.75	...	1.75
tks, wks 100 lb.	...	1.15	1.10	1.15	...	1.10
22°, c-l, cbys, wks 100 lb.	...	2.25	...	2.25	...	2.25
tks, wks 100 lb.	...	1.65	1.60	1.65	...	1.60
CP, cbys lb.	.06½	.08	.06½	.08	.06½	.07½
N & W, 250 lb bbls lb.	.85	.87	.85	.87	.85	.87
Naphthenic, 240-280 s.v., drs lb.	.10	nom.	nom.	.14	.10	.14
Naphthionic, tech, 250 lb bbls lb.	.60	.65	.60	.65	.60	.65
Nitric, 36°, 135 lb cbys, c-l, wks 100 lb. *c*	...	5.00	...	5.00	...	5.00
38°, c-l, cbys, wks 100 lb. *c*	...	5.50	...	5.50	...	5.50
40°, cbys, c-l, wks 100 lb. *c*	...	6.00	...	6.00	...	6.00
42°, c-l, cbys, wks 100 lb. *c*	...	6.50	...	6.50	...	6.50
CP, cbys, delv lb.	.11½	.13	.11½	.13	.11½	.12½
Oxalic, 300 lb bbls, wks, or N Y lb.	.10¾	.12	.10¾	.12	.10¾	.12
Phosphoric, 85%, USP, cbys lb.	...	.12	.12	.14	.12	.14
50%, acid, c-l, drs, wks lb.	...	.12	.06	.12	.06	.08
75%, acid, c-l, drs, wks lb.	...	.07½	...	.07½	...	.07½
Picric, kgs, wks lb.	...	.35	.35	.40	.35	.40
Propionic, 98% wks, drs lb.	...	.25	...	.25	...	.22
80% lb.	.14	.20	...	.20	.16	.17½
Pyrogallic, tech, lump, pwd, bbls lb.	...	1.20	1.05	1.20	1.45	1.63
cryst, USP lb.	1.70	2.25	1.55	2.25	1.55	2.10
Ricinoleic, bbls lb.	.27	.33	.27	.33	...	.35
Salicylic, tech, 125 lb bbls, wks lb.	...	.33	...	.33	...	.33
USP, bbls lb.	.35	.40	.35	.40	.35	.40
Succinic, bbls lb.	...	.75	...	.75	...	.75
Sulfanilic, 250 lb bbls, wks lb.	...	.17	.17	.18	.17	.18
Sulfuric, 60°, tks, wks ton	...	13.00	...	13.00	...	13.00
c-l, cbys, wks 100 lb.	...	1.25	...	1.25	...	1.25
66°, tks, wks ton	...	16.50	...	16.50	...	16.50
c-l, cbys, wks 100 lb.	...	1:50	...	1.50	...	1.50
CP, cbys, wks lb.	.06½	.08	.06½	.08	.06½	.07½
Fuming (Oleum) 20% tks, wks ton	...	18.50	...	18.50	...	18.50
Tannic, tech, 300 lb bbls lb.	.54	.56	.44	.56	.40	.47
Tartaric, USP, gran, powd, 300 lb bbls lb.	.41¼	.42¼	.35¼	.42¼	.27½	.31¼
Tobias, 250 lb bbls lb.	.55	.60	.55	.60	.55	.67
Trichloroacetic bottles lb.	2.00	2.50	2.00	2.50	2.00	2.50
kgs lb.	..	1.75	...	1.75		1.75
Tungstic, tech, bbls lb.	no prices		no prices		1.70	1.80
Albumen, light flake, 225 lb. bbls lb.	.55	.62	.55	.62	.52	.68
dark, bbls lb.	.13	.18	.13	.18	.13	.18
egg, edible lb.	.60	.65	.53	.65	.58	.78
ALCOHOLS						
Alcohol, Amyl (from Pentane) tks, delv lb.	...	.101	...	.101	...	.101
c-l, drs, delv lb.	...	.111	...	.111	...	.111
lcl, drs, delv lb.	...	.121	..	.121	...	.121
Amyl, normal l-c-l drs	...	.08½	...	.08½		.08½
Wyandotte, Mich. lb.	...	.25	...	...	...	...
secondary, tks, delv lb.						
drs, c-l, delv E of Rockies lb.	.	.09½	...	09½	...	.09½
tertiary, rfd, l-c-l, drs, lb.	...	.09	...	...	...	...
Benzyl, cans lb.	...	.68	.68	1.00	.68	1.00
Butyl, normal, tks, f.o.b. wks, frt all'd lb. *d*	...	.08	...	.09	.07	.09
c-l, drs, f.o.b. wks, frt all'd lb. *d*	...	.09	...	.10	.08	.10
Butyl, secondary, tks, delv lb. *d*	. .	.06½	...	.06½	.05½	.06½
c-l, drs, delv lb. *d*	..	.07½	...	.07½	.06½	.07½
Capryl, drs, tech, wks lb.		.85	...	.85	...	.85
Cinnamic, bottles lb.	2.00	2.50	2.00	2.50	2.00	2.50
Denatured, CD, 14, c-l drs, wks gal. *e*	.31½	.36½	.31½	.36½	.27½	.36½
tks, East, wks gal.	..	.25½	...	.25½	.21½	.25½
Western schedule, c-l, drs, wks gal. *e*	...	.36½	.34½	.36½	.34½	.37
c-l, drs, wks gal. *e*	...	.26½	.21½	.26½	.19½	.22
Denatured, SD, No. 1, tks,	...	.23½	...	.23½	.25½	.28½
Diacetone, pure, c-lfi drs, delv lb. *f*	...	.09½	...	.12	.09	.12
tech, contract, drs, c-l, delv lb.	...	.09	...	.11½	.08½	.11½

c Yellow grades 25c per 100 lbs. less in each case; *d* Spot prices are 1c higher; *e* Anhydrous is 5c higher in each case; *f* Pure prices are 1c higher in each case.

ABBREVIATIONS—Anhydrous, anhyd; bags, bgs; barrels, bbls; carboys, cbys; carlots, c-l; less-than-carlots, lcl; drums, drs; kegs, kgs; powdered, powd; refined, ref'd; tanks, tks; works, f.o.b., wks.

Prices Current

	Current	Market	1940 Low	1940 High	1939 Low	1939 High
Alcohols (continued):						
Ethyl, 190 proof, molasses, tks gal. g	...	5.93½	...	5.93½	4.46	4.48½
c-l, drs gal. g	...	5.99½	...	5.99½	4.49	4.54½
c-l, bbls gal. g	...	6.00½	...	6.00½	4.53	4.55½
Furfuryl, tech, 500 lb drs lb.	...	.35	.25	.35	.25	.35
Hexyl, secondary tks, delv lb.	.	.12	...	.12	...	.12
c-l, drs, delv lb.	.	.13	...	.13	...	.13
Normal, drs, wks lb.	3.25	3.50	3.25	3.50	3.25	3.50
Isoamyl, prim, cans, wks lb.	.	.32	...	.32	...	.32
drs, lcl, delv lb.	...	.27	...	.27	...	.27
Isobutyl, ref'd, lcl, drs lb.	...	.073	...	.073	.073	.09
c-l, drs lb.	...	.069	...	.069	.068	.08½
tks lb.	...	.059	...	.059	...	.07½
Isopropyl, ref'd, 91%, c-l, drs, f.o.b. wks, frt all'd lb.	...	.65	...	.65	...	.36
Ref'd 98%, drs, f.o.b. wks, frt all'd gal.	...	.65	...	.65	...	.41
Tech 91%, drs, above terms gal.	...	.33½	...	.33½	...	.33½
tks, same terms gal.	...	.28½	...	.28½	...	.28½
Tech 98%, drs, above terms gal.	...	.36	.36	.37½	...	.37½
tks, above terms gal.	...	.31	.31	.32½	...	.32½
Spec. Solvent, tks, wks gal.	...	.23½	...	.23½	.19	...23½
Aldehyde ammonia, 100 gal drs lb.	.65	.70	.65	.82	.80	.82
Aldehyde Bisulfite, bbls, delv lb.	...	.17	...	.17	...	.17
Aldol, 95%, 55 and 110 gal, drs, delv lb.	.11	.12	.11	.12	.11	.20
Alphanaphthol, crude, 300 lb. bbls lb.	...	.52	...	.52	...	.52
Alphanaphthylamine, 350 lb bbls lb.	...	.32	.32	.34	.32	.34
Alum, ammonia, lump, c-l, bbls, wks 100 lb.	...	3.75	...	3.75	3.40	3.75
delv NY, Phila 100 lb.	...	3.75	...	3.75	3.40	3.75
Granular, c-l, bbls wks 100 lb.	...	3.50	...	3.50	3.15	3.50
Powd, c-l, bbls, wks 100 lb.	...	3.90	...	3.90	3.55	3.90
Chrome, bbls 100 lb.	no prices		6.50	6.75	6.50	6.75
Potash, lump, c-l, bbls, wks 100 lb.	...	4.00	...	4.00	3.65	4.00
Granular, c-l, bbls, wks 100 lb.	...	3.75	...	3.75	3.40	3.75
Powd, c-l, bbls, wks 100 lb.	...	4.15	...	4.15	3.80	4.15
Soda, bbls, wks 100 lb.	...	3.25	...	3.25	...	3.25
Aluminum metal, c-l, NY 100 lb.	...	18.00	18.00	20.00	...	20.00
Acetate, 20%, bbls lb.	.08	.09	.07½	.09	.07½	.09
Basic powd, bbls, delv lb.	.35	.50	.35	.50	.40	.50
32% basic, bbls, delv lb.	.09½	.12	...	...	...	...
Insoluble basic powder, bbls, delv lb.	...	.40	...	...	...	...
Soluble normal pwdr lb.	...	.22	...	...	...	...
Soluble basic powder lb.	...	.33	...	...	...	...
Chloride anhyd 99% wks lb.	.08	.12	.08	.12	.06	.12
93%, wks lb.	.05	.08	.05	.08	.05	.08
Crystals, c-l, drs, wks lb.	.06	.06½	.06	.06½	.06	.06½
Solution, drs, wks lb.	.02¾	.03¼	.02¾	.03¼	.02¾	.03¼
Formate, 30% sol bbls, c-l, delv lb.	...	.13	...	.13	...	.13
Hydrate, 96%, light, 90 lb. bbls, delv lb.	.12½	.13	.12½	.13½	.11½	.13
heavy, bbls, wks lb.	.029	.03½	.029	.03½	.029	.03½
Oleate, drs lb.	.17½	.20	.16¾	.20	.16¾	.18½
Palmitate, bbls lb.	.20½	.21½	.20½	.24½	.23	.24½
Resinate, pp., bbls lb.	..	.15	...	.15	..	.15
Stearate, 100 lb bbls lb.	.18	.19	.19	.20	.16	.22½
Sulfate, com, c-l, bgs, wks 100 lb.	...	1.15	...	1.15	...	1.15
c-l, bbls, wks 100 lb.	...	1.35	...	1.35	...	1.35
Sulfate, iron-free, c-l, bags, wks 100 lb.	...	1.60	1.60	1.80	...	1.45
c-l, bbls, wks 100 lb.	...	1.80	1.65	1.80	...	1.65
Aminoazobenzene, 110 lb kgs lb.	..	1.15		1.15	...	1.15
Ammonia anhyd fert com, tks lb.	...	.05	.04½	.05	.04½	.05½
Ammonia anhyd, 100 lb cyl lb.	...	.16	...	.16	...	.16
50 lb cyl lb.		.22	...	.22	...	.22
26°, 800 lb drs, delv lb.	.02¼	.02½	.02¼	.02½	.02¼	.02½
Aqua 26°, tks, NH cont.	...	.05¼z	.04	.05¼	...	.04z
Ammonium Acetate, kgs lb.	.27	.33	.27	.33	.26	.33
Bicarbonate, bbls, f.o.b. wks 100 lb.	..	5.56	...	5.56	5.15	5.71
Bifluoride, 300 lb bbls lb.	.14½	.16½	.14½	.16½	.14½	.16½
Carbonate, tech, 500 lb bbls lb.	.08¼	.11	.08¼	.11	.08	.12
Chloride, White, 100 lb bbls, wks 100 lb.	4.45	...	4.45	4.90	4.45	4.90
Gray, 250 lb bbls, wks 100 lb.	5.50	5.75	5.50	6.25	5.50	6.25
Lump, 500 lb cks spot lb.	.10½	.11	.10½	.11	.10½	.11
Lactate, 500 lb bbls lb.	.15	.16	.15	.16	.15	.16
Laurate, bbls lb.	...	.23	...	.23	...	.23
Linoleate, 80% anhyd, bbls lb.	...	.12	...	.12	.11	.15
Naphthenate, bbls lb.	...	.17	...	.17	...	.17
Nitrate, tech, bbls lb.	...	.0455	...	.0455	.036	.0455
Oleate, drs lb.	...	.14	...	.14	.11	.14
Oxalate, neut, cryst, powd, bbls lb.	.19	.25	.19	.25	.19	.20
Perchlorate, kgs lb.	.17	nom.	.17	.19	...	.16
Persulfate, 112 lb kgs lb.	.21	.22	.21	.22	.21	.24
Phosphate, diabasic tech, powd, 325 lb bbls lb.	.07¼	.09¼	.07¼	.10	.07½	.10
Ricinoleate, bbls lb.	...	.15	...	.15	...	.15
Stearate, anhyd, bbls lb.	...	.24½	...	.24½	.22	.24½
Paste, bbls lb.	...	.06½	...	.06½	.06½	.08

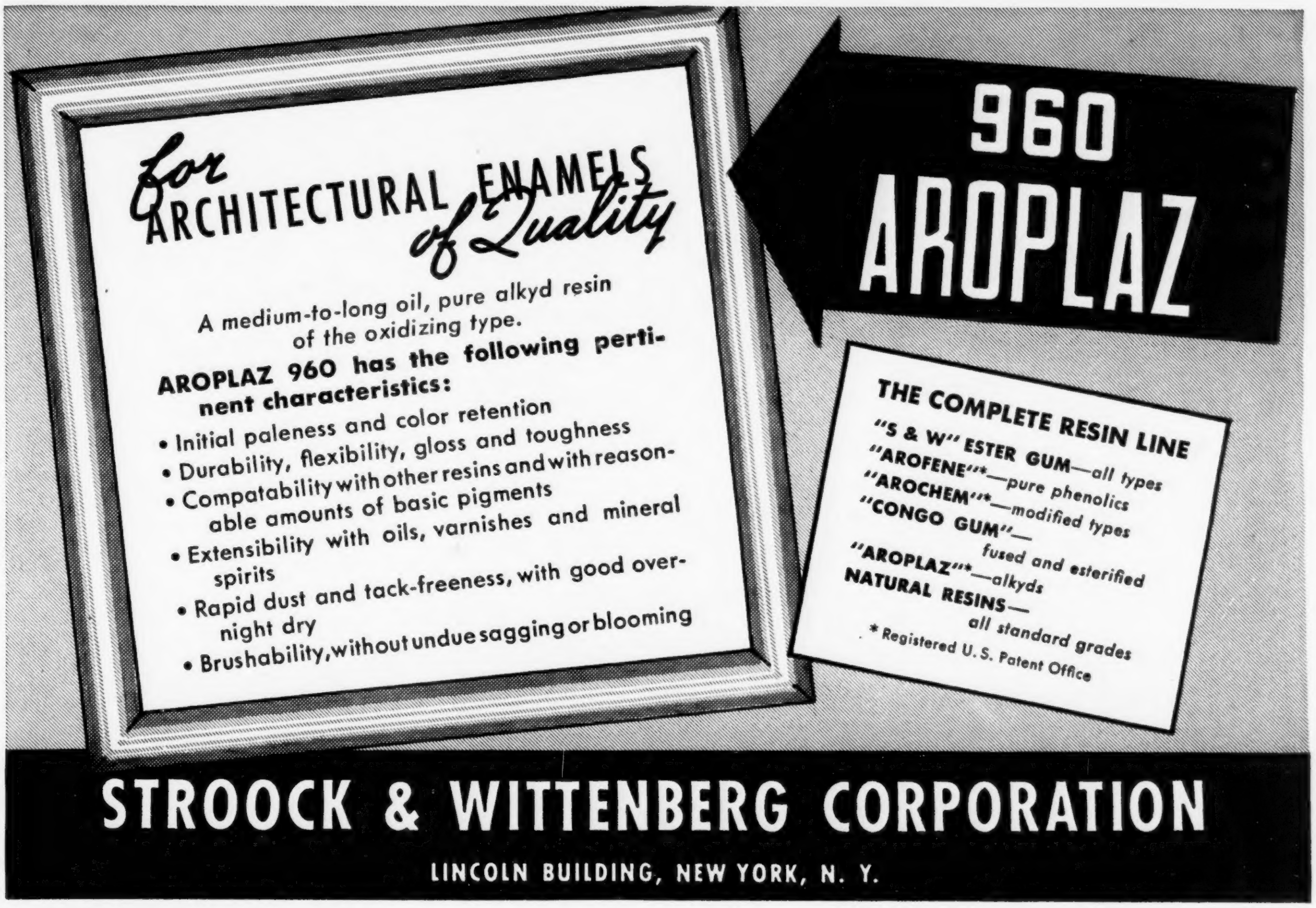
g Grain alcohol 25c a gal. higher in each case. ** On a delv. basis.
z On a f.o.b. wks. basis.

	Current	Market	1940 Low	1940 High	1939 Low	1939 High
Ammonium (continued):						
Sulfate, dom, f.o.b., bulk ton	...	28.00	...	28.00	27.00	28.00
Sulfocyanide, pure, kgs lb.	...	.65	..	.65	.55	.65
Amyl Acetate (from pentane) tks, delv lb.	...	.095	...	.095	.095	.10
c-l, drs, delv lb.	...	.105	...	.105	.105	.11
lcl, drs, delv lb.	...	.115	...	.115	.115	.112
tech drs, delv lb.	...	.12½	...	.12½	.10½	.12½
Secondary, tks, delv lb.	...	.08½	...	.08½	..	.08½
c-l, drs, delv lb.	...	.09½	...	.09½	...	.09½
tks, delv lb.	...	.08½	...	.08½		.08½
Chloride, norm, drs, wks lb.	.56	.68	.56	.68	.56	.68
mixed, drs, wks lb.	.0565	.0665	.0535	.0665	.0565	.077
tks, wks lb.	...	.0465	...	.0465	.0465	.06
Mercaptan, drs, wks lb.	...	1.10	...	1.10	...	1.10
Oleate, lcl, wks, drs lb.	...	.25	...	.25	...	.25
Stearate, lcl, wks, drs lb.		.26		.26	...	.26
Amylene, drs, wks lb.	.102	.11	.102	.11	.102	.11
tks, wks lb.	...	.09	...	.09	...	.09
Aniline Oil, 960 lb drs and tks lb.	...	.14½	...	.14½	.14½	.17½
Annatto fine lb.	.34	.39	.34	.39	.34	.39
Anthracene, 80% lb.	...	.55	...	.55	.55	.75
Anthraquinone, sublimed, 125 lb bbls lb.	...	.65	...	.65	...	.65
Antimony metal slabs, ton lots lb.	...	.14	...	.14	.11¼	.14
Butter of, see Chloride						
Chloride, soln, cbys lb.	...	.16	...	.17	...	.17
Needle, powd, bbls lb.	.20	.22	.18	.22	.12	.20
Oxide, 500 lb bbls lb.	.13	.14	.13	.15¾	.10	.15¾
Salt, 63% to 65%, tins lb.	...	.30	.42	nom.	.25¾	.42
Archil, conc, 600 lb bbls lb.	no prices		no prices		.21	.27
Double, 600 lb bbls lb.	no prices		no prices		.18	.20
Aroclors, wks lb.	.18	.30	.18	.30	.18	.30
Arrowroot, bbls lb.	.09½	.10	.09	.10	.08½	.09
Arsenic, Metal lb.	no prices		....	...	.40	.60
Red, 224 lb cs kgs lb.	no prices		.17½	.18	.18	.19
White, 112 lb kgs lb.	.03¼	.04	.03	.03¾	.03	.03¾

B

	Current	Market	1940 Low	1940 High	1939 Low	1939 High
Barium Carbonate precip, 200 lb bgs, wks ton	52.50	55.00	52.50	62.50	52.50	62.50
Nat (witherite) 90% gr, c-l, wks, bgs ton	43.00	47.00	43.00	47.00	41.00	47.00
Chlorate, 112 lb kgs, NY lb.	.25	.30	.20	.26	.16½	.25
Chloride, 600 lb bbls, delv, zone 1 ton	77.00	92.00	77.00	92.00	77.00	92.00
Dioxide, 88%, 690 lb drs lb.	...	.10	.10	.12	.11	.12
Hydrate, 500 lb bbls lb.	.05½	.07	.05½	.07	.04½	.05½
Nitrate, bbls lb.	.08½	.10½	.09½	.10½	.06¾	.10½
Barytes, floated, 350 lb bbls c-l, wks ton	...	25.15	...	25.15	...	23.65
Bauxite, bulk, mines ton	7.00	10.00	7.00	10.00	7.00	10.00
Bentonite, c-l, 325 mesh, bgs, wks ton	...	16.00	...	16.00	...	16.00
200 mesh ton	...	11.00	...	11.00	...	11.00
Benzaldehyde, tech, 945 lb. drs, wks lb.	.45	.50	.55	.60	.60	.62
Benzene (Benzol), 90%, Ind. 8000 gal tks, ft all'd gal.	...	.14	.14	.16	...	.16
90% c-l, drs gal.	...	.19	.19	.21	...	.21
Ind pure, tks, frt all'd gal.	...	.14	.14	.16	...	.16
Benzidine Base, dry, 250 lb. bbls lb.	...	.70	...	.70	.70	.72
Benzoyl Chloride, 500 lb drs lb.	.23	.28	.23	.28	.40	.45
Benzyl Chloride, 95-97% rfd, drs lb.	.19	.21	.19	.21	.30	.40
Beta-Naphthol, 250 lb bbls, wks lb.	.23	.24	.23	.24	.23	.24
Naphthylamine, sublimed, 200 lb bbls lb.	1.25	1.35	1.25	1.35	1.25	1.35
Tech, 200 lb bbls lb.	.51	.52	.51	.52	.51	.52
Bismuth metal lb.	...	1.25	...	1.25	1.05	1.25
Chloride, boxes lb.	3.20	3.25	3.20	3.25	3.20	3.25
Hydroxide, boxes lb.	3.35	3.46	3.35	3.46	3.15	3.40
Oxychloride, boxes lb.	...	3.10	...	3.10	2.95	3.10
Subbenzoate, boxes lb.	...	3.36	3.25	3.36	3.25	3.30
Subcarbonate, kgs lb.	1.73	1.76	1.73	1.76	1.43	1.76
Subnitrate, fibre, drs lb.	1.48	1.51	1.48	1.51	1.23	1.51
Trioxide, powd, boxes lb.	...	3.56	3.56	3.57	..	3.57
Blanc Fixe, 400 lb bbls, wks ton h	35.00	42.50	50.00	80.00	40.00	80.00
Bleaching Powder, 800 lb drs, c-l, wks, contract 100 lb.	2.00	2.85	...	2.85	...	2.00
lcl, drs, wks lb.	2.25	3.35	2.25	3.35	2.25	3.60
Blood, dried, f.o.b., NY unit	...	2.40	2.25	3.35	2.50	4.25
Chicago, high grade unit	...	2.65	2.00	3.50	2.30	4.25
Imported shipt unit	...	2.50	2.25	3.30	2.65	3.90
Blues, Bronze Chinese						
Prussian Soluble lb.	...	.33	.33	.37	.33	.37
Milori, bbls lb.	.33	.34	.33	.34	.33	.37
Ultramarine,* dry, wks, bbls lb.	...	.11	...	.11	...	.11
Regular grade, group 1 lb.	...	.16	...	.16	...	.16
Special group 1 lb.	...	.19	...	.19	...	.19
Pulp, No. 1 lb.	.22	.27	.22	.27	...	.27
Bone, 4½ + 50% raw, Chicago ton	...	30.00	30.00	33.00	27.00	35.00
Bone Ash, 100 lb kgs lb.	.06	.07	.06	.07	.06	.07
Meal, 3% & 50%, imp ton		32.50	32.00	32.50	22.00	32.00
Domestic, bgs, Chicago ton	29.00	30.00	29.00	32.00	24.00	32.00
Borax, tech, gran, 80 ton lots, sacks, delv ton i	...	43.00	...	43.00	...	43.00
bbls, delv ton i	...	53.00	...	53.00	...	53.00

h Lowest price is for pulp, highest for high grade precipitated; i Crystals $6 per ton higher; USP, $15 higher in each case; *Freight is equalized in each case with nearest producing point.



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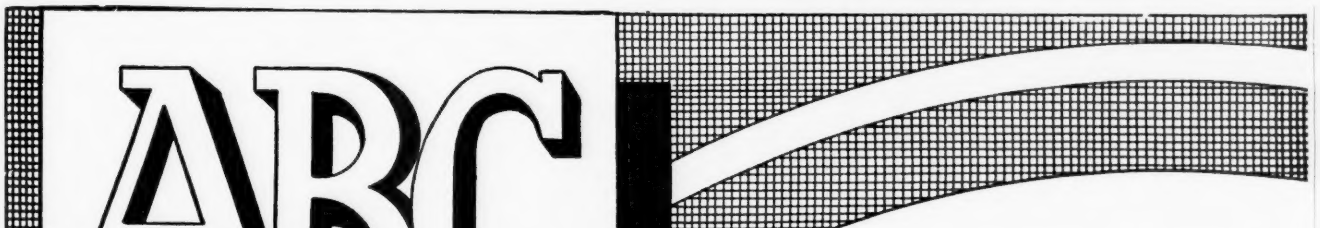

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180 MADISON AVE., NEW YORK, N.Y.

	Current Market		1940 Low	1940 High	1939 Low	1939 High
Borax (continued)						
Tech, powd, 80 ton lots, sacks ... ton *i*	...	48.00	47.00	48.00	...	47.00
bbls, delv ... ton *i*	...	58.00	57.00	58.00	...	57.00
Bordeaux Mixture, drs ... lb.	11	.11½	.11	.11½	.11	.11½
Bromine, cases ... lb.	.25	.30	.25	.43	.30	.43
Bronze, Al, pwd, 300 lb drs lb.		.57	..	.57	.90½	.92½
Gold, blk ... lb.	.60	.65	.60	.65	.45	.65
Butanes, com 16-32° group 3 tks ... lb.	.02½	.03	.02¼	.03¾	.02¼	.03¾
Butyl, acetate, norm drs, frt all'd ... lb.	...	.09	...	.10	.09	.10
tks, frt all'd ... lb	...	.08	...	.09	.08	.09
Secondary, tks, frt all'd lb.	...	.06½	...	.06½	.05½	.06½
drs, frt all'd ... lb.	.07½	.08	.07½	.08	.068	.08
Aldehyde, 50 gal drs, wks ... lb.	.15½	.17½	.15½	.17½	.15½	.17½
Carbinol, norm (see Normal Amyl Alcohol)						
Crotonate, norm, 55 and 110 gal drs, delv ... lb.	...	.35	...	.35	.35	.75
Lactate ... lb.	.23½	.24½	.23½	.24½	.22½	.24½
Oleate, drs, frt all'd ... lb.	...	.25	...	.25	...	.25
Propionate, drs ... lb.	.16½	.17	.16½	.17	.16½	.18½
tks, delv ... lb.	...	.15½	...	.15½	.15½	.17
Stearate, 50 gal drs ... lb.	...	.28½	...	.28½	.26½	.28½
Tartrate, drs ... lb.	.55	.60	.55	.60	.55	.60
Butyraldehyde, drs, lcl, wks lb.	...	.35½	...	.35½	...	.35½

C

	Current Market		1940 Low	1940 High	1939 Low	1939 High
Cadmium Metal ... lb.	.80	.85	.80	.85	.50	.85
Sulfide, orange, boxes ... lb.	...	.75	.75	.85	.75	.90
Calcium, Acetate, 150 lb bgs c-l, delv ... 100 lb.	...	1.90	...	1.90	1.65	1.90
Arsenate, c-l, E of Rockies, dealers, drs ... lb.	.06	.06½	.06	.07¼	.06¾	.07¼
Carbide, drs ... lb.	...	.04¾	.05	.06	.05	.06
Carbonate, tech, 100 lb bgs, c-l ... lb.	...	1.00	...	1.00	...	1.00
Chloride, flake, 375 lb drs, burlap bgs, c-l, delv ... ton	...	20.50	...	22.00	...	22.00
paper bags, c-l, delv ... ton	20.50	35.00	20.50	36.00	23.00	36.00
Solid, 650 lb drs, c-l, delv ... ton	19.00	35.00	19.00	35.00	...	20.00
Ferrocyanide, 350 lb bbls wks ... lb.	...	.20	...	.20	...	.20
Gluconate, Pharm, 125 lb bbls ... lb.	.50	.57	.50	.57	.50	.57
Levulinate, less than 25 bbl lots, wks ... lb.	...	3.00	...	3.00	...	3.00
Nitrate, 100 lb bags ... ton	no prices		28.00	29.00	...	28.00
Palmitate, bbls ... lb.	.22	.24	.22	.24	.22	.23
Phosphate, tribasic, tech, 450 lb bbls ... lb.	.0635	.0705	.0635	.07½	.06½	.07½
Resinate, precip, bbls ... lb.	.13	.14	.13	.14	.13	.14
Stearate, 100 lb bbls ... lb.	.20½	.22½	.20½	.22½	.19	.21
Camphor, slabs ... lb.	.82	.83	.82	.84	.46	.77
Powder ... lb.	.82	.83	.82	.84	.45	.47
Carbon Bisulfide, 500 lb drs lb.	.05	.05¾	.05	.05¾	.05	.05¾
Black, c-l, bgs, delv. price varying with zone† ... lb.	...	.02¾	.02¾	.03¾	.02¾	.03¾
lcl, bgs, f.o.b. whse ... lb.	...	.06525	...	.06525	...	.06¼
cartons, f.o.b. whse ... lb.	...	.06525	...	.06525	...	.06¼
cases, f.o.b. whse ... lb.	...	.07025	...	.07025	...	.07
Decolorizing, drs, c-l ... lb.	.08	.15	.08	.15	.08	.15
Dioxide, Liq 20-25 lb cyl lb.	.06	.08	.06	.08	.06	.08
Tetrachloride, 55 or 110 gal drs, c-l, delv ... lb.	...	.66½	...	.66½	.05	.05½
Casein, Standard, Dom, grd lb.	.12	.12¼	.10	.14½	.07	.23
80-100 mesh, c-l bgs ... lb.	.12½	.12¾	.11	.15	.07½	.23½
Castor Pomace, 5½ NH_3, c-l, bgs, wks ... ton	15.00	...	15.00	17.50	16.50	18.50
Imported, ship, bgs ... ton	no prices		...	20.00	18.00	18.00
Celluloid, Scraps, ivory cs lb.	.12	.15	.12	.15	.12	.15
Transparent, cs ... lb.	...	.20	...	.20	...	.20
Cellulose, Acetate, 50 lb kgs ... lb.	...	.30	.30	.34	.35	.36
Chalk, dropped, 175 lb bbls lb.	...	.02¾	.02¾	.03¾	.02¾	.03¾
Precip, heavy, 560 lb cks lb.	...	.02¾	.02¾	.03¼	.02¾	.03¼
Light, 250 lb cks ... lb.	...	.03¾	.03¾	.04	.03¾	.04
Charcoal, Hardwood, lump, blk, wks ... bu.	...	.15	...	.15	...	.15
Softwood, bgs, delv* ... ton	25.00	36.00	25.00	36.00	23.00	36.00
Willow, powd, 100 lb bbls, wks ... lb.	.06	.07	.06	.07	.06	.07
Chestnut, clarified tks, wks lb.	...	.01¾	...	.01¾	...	.01¾
25%, bbls, wks ... lb.	...	.02½	...	.02½	...	.02
China Clay, c-l, blk mines ton	...	7.60	7.60	9.50	7.00	7.60
Imported, lump, blk ... ton	no prices		...	26.00	22.00	26.00
Chlorine, cyls, lcl, wks, contract ... lb.	...	.07¼	.07¼	.08½	.07½	.08½
cyls, c-l, contract ... lb *j*	...	.05¼	...	.05¼	.05¼	.05½
Liq. tk. wks, contract 100 lb.	...	1.75	...	1.75	1.75	2.00
Multi, c-l, cyls, wks, cont ... lb.	...	.019	...	.019	1.90	2.15
Chloroacetophenone, tins, wks ... lb.	3.00	3.50	3.00	3.50	3.00	3.50
Chlorobenzene, Mono, 100 lb. drs, lcl, wks ... lb.	.06	.08	.06	.08	.06	.07½
Chloroform, tech, 1000 lb drs ... lb.	...	.20	.20	.21	.20	.21
USP, 25 lb tins ... lb.	...	.30	.30	.31	.30	.31
Chloropicrin, comml cyls ... lb.	...	.80	...	.80	...	.80
Chrome, Green, CP ... lb.	.21	.25	.21	.25	.21	.25
Yellow ... lb.	.13½	.14½	.13½	.14½	.13½	.15½
Chromium Acetate, 8% Chrome, bbls ... lb.	...	.05¾	...	.05¾	.05	.08
Fluoride, powd, 400 lb bbl ... lb.	.27	.28	.27	.28	.27	.28

j A delivered price; * Depends upon point of delivery; † New bulk price, tank cars ¼c per lb. less than bags in each zone.

	Current Market		1940 Low	1940 High	1939 Low	1939 High
Coal tar, bbls ... bbl.	7.50	7.75	7.50	8.00	7.50	8.00
Cobalt Acetate, bbls ... lb.	...	.80½	...	.80½	.65	.71
Carbonate tech, bbls ... lb.	...	1.58	1.38	1.60	1.25	1.63
Hydrate, bbls ... lb.	...	1.98	...	1.78	...	1.78
Linoleate, solid, bbls ... lb.	...	.33	...	.33	...	.33
paste, 6%, drs ... lb.	...	.31	...	.31	...	.31
Oxide, black, bgs ... lb.	...	1.84	...	1.84	1.67	1.84
Resinate, fused, bbls ... lb.	...	.13½	...	.13½	...	.13½
Precipitated, bbls ... lb.	...	.34	...	.34	...	.34
Cochineal, gray or bk bgs lb.	.37	.38	.37	.38	.35	.38
Teneriffe silver, bgs ... lb.	.38	.39	.38	.39	.36	.39
Copper, metal, electrol 100 lb.	...	12.00	11.00	12.00	.10	12.50
Acetate, normal, bbls, wks ... lb.	.22	.24	.22	.24	.21	.24
Carbonate, 52-54% 400 lb bbls ... lb.	...	.1650	.1570	.169	.14½	.169
Chloride, 250 lb bbls ... lb.	...	.16	.16	.18	.12½	.18
Cyanide, 100 lb drs ... lb.	...	.34	...	.34	...	.34
Oleate, precip, bbls ... lb.	...	.20	...	.20	...	.20
Oxide, black, bbls, wks lb.	...	.18	.18	.18¾	.15	.18¾
red 100 lb bbls ... lb.	...	.19½	.19½	.20	.15¾	.20
Sub-acetate verdigris, 400 lb bbls ... lb.	.18	.19	.18	.19	.18	.19
Sulfate, bbls, c-l, wks, 100 lb.	...	4.75	4.45	4.75	4.10	4.75
Copperas crys and sugar bulk c-l, wks ... ton	18.00	20.00	14.00	20.00	14.00	16.00
Corn Sugar, tanners, bbls 100 lb.	...	3.36	2.99	3.36	2.89	3.19
Corn Syrup, 42°, bbls 100 lb.	...	3.42	3.02	3.47	2.92	3.17
43°, bbls ... 100 lb.	...	3.47	3.07	3.52	2.97	3.22
Cotton, Soluble, wet 100 lb. bbls ... lb.	.40	.42	.40	.42	.40	.42
Cream Tartar, powd & gran 300 lb bbls ... lb.	...	.34½	.28¼	.34½	.22¼	.25¾
Creosote, USP 42 lb cbys lb.	.45	.47	.45	.47	.45	.47
Oil, Grade 1 tks ... gal.	.13½	.14	.13½	.14	.13½	.14
Grade 2 ... gal.	.122	.132	.122	.132	.122	.132
Cresol, USP, drs ... lb.	.09¾	.10¼	.09¾	.10¼	.09½	.10½
Crotonaldehyde, 97%, 55 and 110 gal drs, wks ... lb.	.11	.12	.11	.12	.11	.22*
Cutch, Philippine, 100 lb. bale lb.	...	.04½	.04	.04½	.04	.04½
Cyanamid, pulv, bags, c-l, frt all'd, nitrogen basis, unit	...	1.40	...	1.40	...	1.27½

D

	Current Market		1940 Low	1940 High	1939 Low	1939 High
Derris root 5% rotenone, bbls ... lb.	.24	.30	.24	.30	.24	.30
Dextrin, corn, 140 lb bgs f.o.b., Chicago ... 100 lb.	...	3.80	3.40	3.80	3.30	3.75
British Gum, bgs ... 100 lb.	...	4.05	3.65	4.05	3.55	3.95
Potato, Yellow, 220 lb bgs lb.	...	.07¾	...	.07¾	.07	.08¾
White, 220 lb bgs, lcl lb.	.08½	.09	.08½	.09	.08	.09
Tapioca, 200 bgs, lcl ... lb.	...	.0715	...	.0715	...	.0715
White, 140 lb. bgs ... 100 lb.	...	3.75	3.35	3.75	3.25	3.70
Diamylamine, c-l, drs, wks lb.	...	.47	...	.47	...	.47
lcl drs, wks ... lb.	...	.48	...	.50	...	.50
tks, wks ... lb.	...	.45	...	.45	...	.45
Diamylene, drs, wks ... lb.	.095	.102	.095	.102	.095	.102
tks, wks ... lb.	...	.08½	...	.08½	...	.08½
Diamylether, wks, drs ... lb.	.085	.092	.085	.092	.085	.092
tks, wks ... lb.	...	.075	...	.075	...	.075
Oxalate, lcl, drs, wks ... lb.	...	.30	...	.30	...	.30
Diamylphthalate, drs, wks lb.	.21	.21½	.21	.21½	.19	.21
Diamyl Sulfide, drs, wks lb.	...	1.10	...	1.10	...	1.10
Diatomaceous Earth, see Kieselguhr.						
Dibutoxy Ethyl Phthalate, drs, wks ... lb.	...	.35	...	.35	...	.35
Dibutylamine, lcl, drs, wks lb.	.51	.53	.51	.53	.53	.55
c-l drs, wks ... lb.	...	.50	...	.50	...	...
tks, wks ... lb.	...	.48	...	.48	...	...
Dibutyl Ether, drs, wks, lcl lb.	.24½	.25	.24½	.25	.24½	.25
Dibutylphthalate, drs, wks, frt all'd ... lb.	.19	.19½	.19	.19½	.19	.19½
Dibutyltartrate, 50 gal drs lb.	...	.50	...	.50	.45	.54
Dichlorethylene, drs ... lb.	...	.25	...	.25	...	.25
Dichloroethylether, 50 gal drs, wks ... lb.	.15	.16	.15	.16	.15	.16
tks, wks ... lb.	...	.14	...	.14	...	.14
Dichloromethane, drs, wks lb.	...	.23	...	.23	...	.23
Dichloropentanes, drs, wks lb.	...	.025	...	.025	no prices	
tks, wks ... lb.	...	.0221	...	.0221	no prices	
Diethanolamine, tks, wks ... lb.	...	.22½	...	.22½	.22½	.23
Diethylamine, 400 lb drs, lcl, f.o.b., wks ... lb.	...	.70	...	.70	.70	3.00
Diethylaniline, 850 lb drs lb.	.40	.52	.40	.52	.40	.52
Diethyl Carbinol, drs ... lb.	.60	.75	.60	.75	.60	.75
Diethylcarbonate, com drs lb.	...	.25	...	.25	.31¾	.35
Diethylorthotoluidin, drs lb.	.64	.67	.64	.67	.64	.67
Diethylphthalate, 1000 lb drs lb.	.19	.19½	.19	.19½	.19	.19½
Diethylsulfate, tech, drs, wks, lcl ... lb.	.13	.14	.13	.14	.13	.14
Diethyleneglycol, drs ... lb.	.14½	.15½	.14½	.15½	.14½	.17
Mono ethyl ethers, drs ... lb.	.14½	.15½	.14½	.16	.15	.16
tks, wks ... lb.	...	.13½	...	.13½	.13½	.14
Mono butyl ether, drs ... lb.	.22½	.24½	.22½	.24½	.23	.24
tks, wks ... lb.	...	.22	...	.22	...	.22
Diethylene oxide, 50 gal drs, wks ... lb.	.20	.24	.20	.24	.20	.24
Diglycol Laurate, bbls ... lb.	...	.16	.16	.21	.15	.23
Oleate, bbls ... lb.	...	.17	.13	.17	.13	.20
Stearate, bbls ... lb.	...	.22	.22	.26	.20	.28
Dimethylamine, 400 lb drs, pure 25 & 40% sol 100% basis ... lb.	...	1.00	...	1.00	...	1.00
Dimethylaniline, 240 lb drs lb.	.23	.24	.23	.24	.23	.24
Dimethyl Ethyl Carbinol, drs lb.	.60	.75	.60	.75	.60	.75
Dimethyl phthalate, drs, wks, frt all'd ... lb.	...	.18½	...	.18½	...	.19
Dimethylsulfate, 100 lb drs lb.	.45	.50	.45	.50	.45	.50

k Higher price is for purified material; * These prices were on a delivered basis.

	Current Market		1940 Low	1940 High	1939 Low	1939 High
Dinitrobenzene, 400 lb bbls lb. *k*	...	.18	.18	.19	.16	.19
Dinitrochlorobenzene, 400 lb bbls lb.	. .	.14	...	.14	.13½	.14
Dinitronaphthalene, 350 lb bbls lb.	.35	.38	.35	.38	.35	.38
Dinitrophenol, 350 lb bbls lb.	...	.22	.22	.23	.22	.24
Dinitrotoluene, 300 lb bbls lb.	...	.15½	...	.15½	...	.15½
Diphenyl, bbls lb.	.15	.20	.15	.20	.15	.25
Diphenylamine lb.	..	.25	.25	.32	.32	.32
Diphenylguanidine, 100 lb drs lb.	.35	.37	.35	.37	.31	.37
Dip Oil, see Tar Acid Oil.						
Divi Divi pods, bgs shipmt ton	.	nom.	...	nom.	...	nom.
Extract lb.	.05¾	.06¾	.05¾	.06¾	.05¾	.06¾
Drymet (see sodium metasilicate anhydrous).						

E

	Current Market		1940 Low	1940 High	1939 Low	1939 High
Egg Yolk, dom., 200 lb. cases lb.	.59	.61	.57	.62	.59	.69
Epsom Salt, tech, 300 lb bbls c-l, NY 100 lb.	...	1.90	1.90	2.10	1.90	2.10
USP, c-l, bbls 100 lb.	...	2.10	...	2.10	...	2.10
Ether, USP anaesthesia 55 lb drs lb.	...	.26	...	.26	.22	.23
Isopropyl 50 gal drs lb.	.07	.08	.07	.08	.07	.08
tks, frt all'd lb.	...	.06	...	.06	...	.06
Nitrous conc bottles lb.		.68	..	.68	...	.68
Synthetic, wks, drs lb.	.08	.09	.08	.09	.08	.09
Ethyl Acetate, 85% Ester tks, frt all'd lb.	...	.06	.06	.06½	.051	.061
drs, frt all'd lb.	...	.07	.07	.08½	.061	.08
99%, tks, frt all'd lb.	...	.06¼	.06¼	.08	.0585	.0685
drs, frt all'd lb.	...	.07¼	.07¼	.08¾	.0685	.0785
Acetoacetate, 110 gal drs lb.		.27½	...	.27½	...	.27½
Benzylaniline, 300 lb drs lb.	.86	.88	.86	.88	.86	.88
Bromide, tech drs lb.	.50	.55	.50	.55	.50	.55
Cellulose, drs, wks, frt all'd lb.	.45	.50	.45	.50	.45	.50
Chloride, 200 lb drs lb.	.18	.20	.18	.20	.22	.24
Chlorocarbonate, cbys lb.	...	.30	...	.30	...	.30
Crotonate, drs lb.	.	35	...	.35	.35	.75
Formate, drs, frt all'd lb.	.25	.26	.23	.24	.27	.28
Lactate, drs, wks lb.	...	.33½	...	.33½	...	.33½
Oxalate, drs, wks lb.	...	.25	...	.25	.30	.34
Oxybutyrate, 50 gal drs, wks lb.	1.00	nom.	.30	1.00	.30	.30½
Silicate, drs, wks lb.	...	.77	...	.77	...	.77
Ethylene Dibromide, 60 lb drs lb.	.65	.70	.65	.70	.65	.70
Chlorhydrin, 40%, 10 gal cbys chloro, cont lb.	.75	.85	.75	.85	.75	.85
Anhydrous lb.	...	.75	...	.75	...	.75
Dichloride, 50 gal drs, wks lb.	.0595	.0694	.0595	.0694	.0545	.0994
Glycol, 50 gal drs, wks lb.	.14½	.18½	.14½	.18½	.14½	.21
tks, wks lb.	...	.13½	...	.13½	.13½	.16
Mono Butyl Ether, drs, wks lb.	.16½	.17½	.16½	.21	.16½	.22
tks, wks lb.	...	.15½	...	.15½	.15½	.19
Mono Ethyl Ether, drs wks lb.	.14½	.15½	.14½	.15½	.14½	.17
tks, wks lb.	...	.13½	...	.13½	.13½	.15
Mono Ethyl Ether Acetate, drs, wks lb.	.11½	.12½	.11½	.13	.11½	.14
tks, wks lb.	...	.10½	...	.10½	.10½	.13
Mono Methyl Ether, drs wks lb.	.15½	.16½	.15½	.17	.16	.22
tks, wks lb.	..	.14½	...	.14½	.14½	.17
Oxide, cyl lb.	.50	.55	.50	.55	.50	.55
Ethylideneaniline lb.	.45	.47½	.45	.47½	.45	.47½

F

	Current Market		1940 Low	1940 High	1939 Low	1939 High
Feldspar, blk pottery ton	17.00	19.00	17.00	19.00	17.00	19.00
Powd, blk wks ton	14.00	17.50	14.00	17.50	14.00	14.50
Ferric Chloride, tech, crys, 475 lb bbls lb.	.05	.07½	.05	.07½	.05	.07½
sol, 42° cbys lb.	.06½	.07	.06¼	.07	.06¼	.06½
Fish Scrap, dried, unground wks unit *l*	...	3.25	3.10	4.25	3.00	4.25
Acid, Bulk, 6 & 3%, delv Norfolk & Baltimore basis unit *m*	...	2.50	2.25	3.50	2.35	3.00
Fluorspar, 98% bgs lb.	.	32.60		32.60	30.00	33.00
Formaldehyde, USP, 400 lb bbls, wks lb.	.055	.06	.05¾	.06¼	.05¾	.06¼
Fossil Flour lb.	.02½	.04	.02½	.04	.02½	.04
Fullers Earth, blk, mines ton	...	15.00	...	15.00	10.00	11.00
Imp powd, c-l, bgs ton	no prices		...	25.00	23.00	30.00
Furfural (tech) drs, wks lb.	.10	.15	.10	.15	.10	.15
Furfuramide (tech) 100 lb drs lb.		.30	..	.30	...	.30
Fusel Oil, 10% impurities lb.	.16	.17¼	.16	.17¼	.12½	.17¼
Fustic, crystals, 100 lb boxes lb.	.24	.25	.24	.28	.22	.28
Liquid 50°, 600 lb bbls lb.	.10½	.14	.10½	.14	.09½	.14
Solid, 50 lb boxes lb.	.19	.21	.19	.21	.17½	.21

G

	Current Market		1940 Low	1940 High	1939 Low	1939 High
G Salt paste, 360 lb bbls lb.	...	.45	.45	.47	.45	.47
Gambier, com 200 lb bgs lb.	.06½	.07	.06½	.07	.06¾	.07¾
Singapore cubes, 150 lb bgs 100 lb.	.08¼	.08¾	.08¼	.10	.08	.10
Gelatine, tech, 100 lb cs lb.	.42	.43	.42	.43	.42	.50
Glauber's Salt, tech, c-l, bgs, wks* 100 lb.	.95	1.18	.95	1.18	.95	1.18
Anhydrous, see Sodium Sulfate						

l + 10; *m* + 50; * Bbls. are 20c higher.

	Current Market		1940 Low	1940 High	1939 Low	1939 High
Glue, bone, com grades, c-l bgs lb.	.13½	.15	.13½	.15½	.13½	.15½
Better grades, c-l, bgs lb.	.15	.23	.15	.23	.11½	.15½
Glycerin, CP, 550 lb drs lb.	.	.12½	...	.12½	...	.12½
Dynamite, 100 lb drs lb.		nom.	.	nom.	...	.09
Saponification, drs lb.	.09½	.10½	.09½	.13	.08½	.10
Soap Lye, drs lb.	.07⅛	.07⅜	.07⅛	.08¼	.07½	.07⅞
Glyceryl Bori-Borate, bbls lb.	...	.40	...	.40	...	.40
Monoricinoleate, bbls lb.	.	.27	...	.27	...	.27
Monostearate, bbls lb.	...	.30	...	.30	...	.30
Oleate, bbls lb.	...	.22	...	.22	...	.22
Phthalate lb.	..	.38	.37	.38	...	.37
Glyceryl Stearate, bbls lb.	...	.18	...	.18	.24	.27½
Glycol Bori-Borate, bbls lb.	...	.22	...	.22	.22	.23
Phthalate, drs lb.	...	.38	...	.38	.38	.40
Stearate, drs lb.	...	.26	...	.26	...	.26

GUMS

	Current Market		1940 Low	1940 High	1939 Low	1939 High
Gum Aloes, Barbadoes lb.	.80	.85	.80	.90	.85	.90
Arabic, amber sorts lb.	.14	.15	.08½	.15	.09	.24
White sorts, No. 1, bgs lb.	.35	.36	.28	.36	.23	.35
No. 2, bgs lb.	no prices		.27	.34	.21	.34
Powd, bbls lb.	.18	.20	.12½	.20	.12½	.27
Asphaltum, Barbadoes (Manjak) 200 lb bgs, f.o.b. NY lb.	.04½	.05½	.02½	.10½	.02½	.10½
California, f.o.b. NY, drs ton	29.00	36.50	29.00	36.50	29.00	55.00
Egyptian, 200 lb cases, f.o.b. NY lb.	.12	.15	.12	.15	.12	.15
Benzoin Sumatra, USP, 120 lb cases lb.	.21	.22	.17	.24	.17	.34
Copal, Congo, 112 lb bgs, clean, opaque lb.	...	.49½	...	.49½	.18¼	.29½
Dark amber lb.	...	.12⅜	.11⅜	.12⅜	.07⅛	.11⅜
Light amber lb.		.17	...	.17	.11¼	.17
Copal, East India, 180 lb bgs Macassar pale bold lb.	...	.12¾	.12¾	.15⅝	.11⅜	.15¼
Chips lb.	...	.06¾	.06¾	.09	.05⅜	.08½
Dust lb.	.	.05¼	.04¾	.06¾	.03¼	.07⅛
Nubs lb.	...	.10½	.10½	.14⅜	.09½	.13¾
Singapore, Bold lb.	.	.15¾	.14⅝	.17½	.14	.18¼
Chips lb.	.	.08½	.08½	.09⅛	.05⅝	.10¼
Dust lb.	...	.05¼	.04¾	.06¾	.03¼	.07⅛
Nubs lb.	.	.11	.11	.13½	.09⅝	.14⅜
Copal Manila, 180-190 lb	...	.13⅞	.13¾	.16¾	.09¾	.14½
Loba B lb.	...	.11¾	.11¾	.16⅛	.09	.14⅛
Loba C lb.	...	.11¼	.11¼	.14½	.07⅞	.12½
DBB lb.	...	.10	.06⅞	.12⅛	.05⅛	.08½
MA sorts lb.	...	.07¾	.07¾	.13¾	.05⅞	.11
Copal Pontianak, 224 lb cases, bold genuine lb.	...	.15⅜	.15⅛	.18½	.15¼	.18½
Chips lb.	...	.10	.08⅜	.10½	.07⅛	.11½
Mixed lb.	...	.14⅜	.14⅛	.16⅝	.13⅜	.16⅝
Nubs lb.	...	.12¾	.10¾	.13½	.10½	.14⅜
Split lb.	...	.13¾	.13½	.16⅛	.12	.16⅛
Damar Batavia, 136 lb cases A lb.	...	.21⅝	.21⅝	.22¾	.20	.23¾
B lb.	...	.20¼	.20⅛	.21⅛	.18½	.21⅛
C lb.	.	.14⅝	.15⅝	.15¼	.13½	.15⅝
D lb.	...	.13¼	.13¼	.13¾	.12¼	.14¼
A/D lb.	...	.15¼	.13⅞	.14½	.12¾	.15¼
A/E lb.	...	.12⅞	.12⅞	.13⅜	.11⅜	.13¾
E lb.	...	.10	.10	.10⅜	.07⅜	.10
F lb.	...	.08	.08	.08¾	.07¼	.08¾
Singapore, No. 1 lb.	...	.16⅝	.16⅝	.19⅝	.13¼	.19½
No. 2 lb.	...	.12¼	.12¼	.15¾	.10½	.16⅜
No. 3 lb.	...	.07⅛	.07⅛	.09	.05¼	.09⅛
Chips lb.	...	.11	.11	.12½	.09¼	.12½
Dust lb.	...	.07⅛	.07⅛	.09	.05¼	.09⅛
Seeds lb.	...	.09⅞	.09⅞	.10½	.07⅜	.10½
Elemi, cns, c-l lb.	.	.08½	.10⅛	.11⅝	.08⅛	.12⅝
Ester lb.	.06¼	.06¾	.06¼	.06¾	.06	.07
Gamboge, pipe, cases lb.	.75	.80	.70	.75	.55	.80
Powd, bbls lb.	.80	.85	.75	.80	.60	.85
Ghatti, sol, bgs lb.	.11	.15	.11	.15	.11	.15
Karaya, bbls, bxs, drs lb.	.14	.33	.14	.33	.14	.33
Kauri, NY Brown XXX, cases lb.	...	.60	...	60	.60	.60½
BX lb.	.	.38	...	.38	...	.38
B1 lb.	...	.28	...	.28	...	.28
B2 lb.	...	.24	...	.24	...	.24
B3 lb.	...	.18½	...	.18½	...	.18½
Pale XXX lb.	...	.61	...	.61	...	.61
No. 1 lb.	..	.41	...	.41	...	.41
No. 2 lb.	..	.24	...	.24	...	.24
No. 3 lb.	.	.17¾	...	.17¾	...	.17¾
Kino, tins lb.	4.00	4.50	4.00	4.50	2.50	4.50
Mastic lb.	2.25	2.50	.85	2.50	.55	.90
Sandarac, prime quality, 200 lb bgs & 300 lb cks lb.	.45	.50	.35	.37	.15	.37
Senegal, picked bags lb.		.30	...	.30	.25	.30
Sorts lb.		.13	...	.13	.09¼	.13
Thus, bbls 280 lbs.	15.00	15.25	15.00	15.25	13.50	15.25
Tragacanth, No. 1, cases lb.	3.50	3.75	2.65	3.50	2.25	2.50
No. 2 lb.	3.35	3.60	2.55	3.35	1.90	2.40
No. 3 lb.	2.90	3.10	2.45	2.90	1.60	2.25
Yacca, bgs lb.	.03½	.04	.03½	.04	.03½	.08

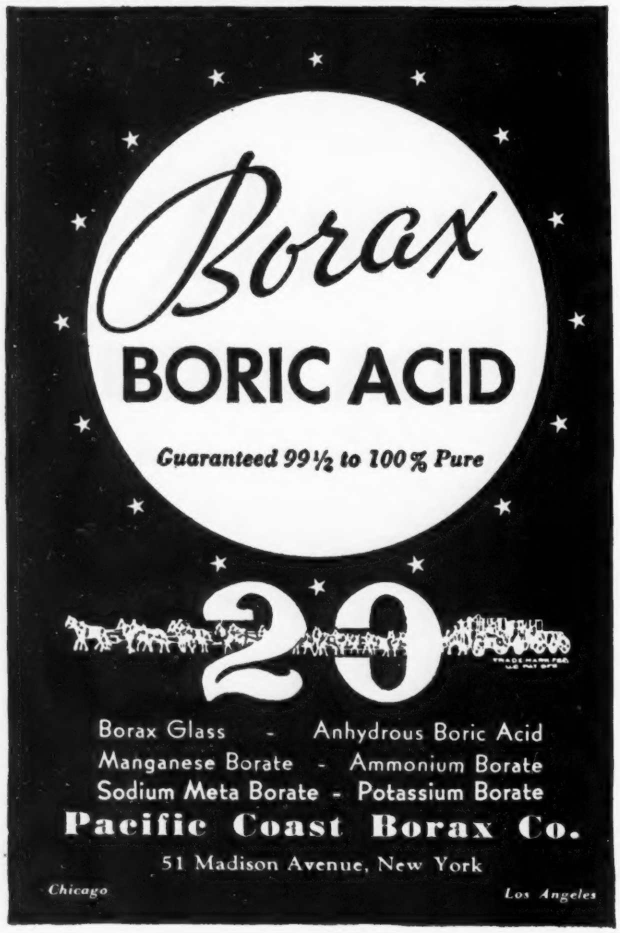
H

	Current Market		1940 Low	1940 High	1939 Low	1939 High
Helium, cyl (200 cu. ft.) cyl.	..	25.00	...	25.00	...	25.00
Hematine crystals, 400 lb bbls lb.	.20	.30	.20	.30	.20	.34
Hemlock, 25%, 600 lb bbls. wks lb.	...	.03⅛	.03⅛	.03⅜	.03	.03⅜
tks lb.	...	.02¾	.02¾	.03	.02⅝	.02¾
Hexalene, 50 gal drs, wks lb.	...	.30	...	.80	...	.30

	Current Market		1940 Low	1940 High	1939 Low	1939 High
Hexane, normal 60-70° C.						
Group 3, tks ....gal.	...	.10½	...	.10½	...	.10½
Hexamethylenetetramine,						
powd, drs ....lb.	.32	.33	.32	.33	.32	.36
Hexyl Acetate, secondary,						
delv, drs ....lb.	.13	.13½	.13	.13½	.13	.13½
tks ....lb.		.12		.12		.12
Hoof Meal, f.o.b. Chicago unit	2.00	2.50	2.00	3.15	2.50	3.25
Hydrogen Peroxide, 100 vol,						
140 lb cbys ....lb.	.16½	.18½	.16½	.20	.19½	.20
Hydroxylamine Hydro-						
chloride ....lb.	...	3.15	...	3.15		3.15
Hypernic, 51°, 600 lb bbls lb.	...	.14	...	.14	.13	.21
I						
Indigo, Bengal, bbls .....lb.	1.63	1.67	1.63	1.67	...	2.40
Synthetic, liquid ......lb.	.16½	.19	.16½	.19	.16½	.19
Iodine, Resublimed, jars..lb.	...	1.75	1.75	2.50	1.75	2.00
Irish Moss, ord, bales ...lb.	.22	.25	.15	.16	.10	.10
Bleached, prime, bales ..lb.	.30	.32	.28	.32	.19	.20
Iron Acetate Liq. 17°, bbls						
delv ....lb.	.03	.04	.03	.04	.03	.04
Chloride see Ferric Chloride.						
Nitrate, coml, bbls..100 lb.	2.75	3.00	2.75	3.00	2.32	3.11
Isobutyl Carbinol (128-132° C)						
drs, frt all'd ....lb.	...	.22½	.22½	.34	.33	.34
tks, frt all'd ....lb.	...	.21½	.21½	.32	...	.32
Isopropyl Acetate, tks, frt						
all'd ....lb.	...	.06	.05½	.06	.051	.06
drs, frt all'd ....lb.	.07	.07½	.06½	.07½	.061	.07
Ether, see Ether, isopropyl.						
Keiselguhr, dom bags, c-l,						
Pacific Coast ....ton	22.00	35.00	22.00	35.00	22.00	35.00
L						
Lead Acetate, f.o.b. NY, bbls.						
White, broken ....lb.	...	.11	...	.11	.10	.11
cryst, bbls ....lb.	...	.11	...	.11	.10	.11
gran, bbls ....lb.	...	.11¾	...	.11¾	.10¾	.11¾
powd, bbls ....lb.	...	.11¾	...	.11¾	.10¾	.11¾
Arsenate, East, drs ...lb.	...	.08½	.08½	.11	.10	.11½
Linoleate, solid, bbls...lb.		.19		.19	...	.19
Metal, c-l, NY .....100 lb.	5.00	5.55	4.90	5.55	4.75	5.55
Nitrate, 500 lb bbls, wks lb.	.11	.14	.11	.14	.10	.12
Oleate, bbls ....lb.	.18½	.20	.18½	.20	.18½	.20
Red, dry, 95% Pb_3O_4,						
delv ....lb.	...	.07¾	.07½	.08	.07¼	.08½
97% Pb_3O_4, delv ...lb.	...	.08¼	.0765	.08¼	.07½	.0835
98% Pb_3O_4, delv ...lb.	...	.08½	.08	.08¾	.07¾	.0860
Resinate, precip, bbls..lb.	...	.16½	...	.16½	...	.16½
Stearate, bbls ....lb.	...	.25	...	.26	.22	.25
Titanate, bbls, c-l, f.o.b.						
wks, frt all'd ....lb.	.10	.10¼	.10	.10¼	.11	.11½
White, 500 lb bbls, wks, lb.	...	.07¼	.07	.07¼	...	.07
Basic sulfate, 500 lb bbls,						
wks ....lb.	...	.06½	.06¼	.06½	...	.06¼
Lime, chemical quicklime,						
f.o.b., wks, bulk ...ton	7.00	13.00	7.00	13.00	7.00	8.00
Hydrated, f.o.b. wks...ton	8.50	16.00	8.50	16.00	8.50	12.00
Lime Salts, see Calcium Salts						
Lime, sulfur, dealers, tks.gal.	...	.07½	.07½	.11½	.08	.11½
drs ....gal.	.10	.14	.11	.16	.11	.16
Linseed Meal, bgs ......ton	...	23.50	23.50	37.00	34.00	42.00
Litharge, coml, delv, bbls lb.	.07	.07¼	.06½	.07½	.06¼	.071
Lithopone, dom, ordinary,						
delv, bgs ....lb.	...	.036	...	.036	.03¾	.04⅛
bbls ....lb.	..	.0385	.03¾	.03¾	.04	.04⅜
High strength, bgs .....lb.	...	.05	...	.05	.05¼	.05⅝
bbls ....lb.	...	.05¼	...	.05¼	.05½	.05⅞
Titanated, bgs ....lb.	...	.05	...	.05	.05¼	.05⅝
bbls ....lb.	...	.05¼	...	.05¼	.05½	.05⅞
Logwood, 51°, 600 lb bbls lb.	.10½	.12½	.10½	.12½	.09½	.12½
Solid, 50 lb boxes ....lb.	.16½	.20½	.16½	.20½	.15	.20½
M						
Madder, Dutch ....lb.	.22	.25	.22	.25	.22	.25
Magnesite, calc, 500 lb bbls ton	60.00	65.00	58.00	66.00	58.00	66.00
Magnesium Carb, tech, 70						
lb bgs, wks ....lb.	...	.06¼	...	.06¼	.05¾	.06½
Chloride flake, 375 lb bbls,						
c-l, wks ....ton	...	32.00	32.00	42.00	39.00	42.00
Fluosilicate, crys, 400 lb						
bbls, wks ....lb.	.10	.10½	.10	.10½	.10	.10½
Oxide, calc tech, heavy						
bbls, frt all'd .....lb.	...	.26	.25	.30	.25	.30
Light bbls above basis lb.	...	.26	.20	.26	.20	.25
USP Heavy, bbls, above						
basis ....lb.	...	.26	.25	.30	.25	.30
Palmitate, bbls ....lb.	.33	nom.	.33	nom.	.33	nom.
Silicofluoride, bbls ....lb.	.11	.11½	.11	.11½	.09½	.11½
Stearate, bbls ....lb.	.23	.26	.23	.27	.21	.24
Manganese, acetate, drs...lb.	...	.26½	...	.26½	...	.26½
Borate, 30%, 200 lb bbls lb.	.15	.16	.15	.16	.15	.16
Chlorate, 600 lb cks....lb.	...	.08½		.08½	.07½	.12
Dioxide, tech (peroxide),						
paper bags, c-l ......ton	...	70.00	62.50	70.00	47.50	66.50
Hydrate, bbls ....lb.	...	.82	...	.82	...	.32
Linoleate, liq, drs .....lb.	.18	.19½	.18	.19½	.18	.19½
solid, precip, bbls ....lb.	...	.19	...	.19	...	.19
Resinate, fused, bbls ...lb.	.08¼	.08½	.08¼	.08½	.08¼	.08½
precip, drs ....lb.	...	.12	...	.12	...	.12
Sulfate, tech, anhyd, 90-						
95%, 550 lb drs ...lb.	.10½	.10¾	.08	.09¾	.07	.08½
Mangrove, 55%, 400 lb bbls lbs.						.04
Bark, African ....ton	35.00	36.00	30.00	39.50	23.00	35.00

	Current Market		1940 Low	1940 High	1939 Low	1939 High
Mannitol, pure cryst, cs, wks lb.	...	.90	.90	1.00	.95	1.20
commercial grd, 250 lb bbls ....lb.	.38	.45	.38	.50	.42	.57
Marble Flour, blk ......ton	12.00	14.00	12.00	14.00	12.00	14.00
Mercury chloride(Calomel) lb.	...	2.70	2.45	2.95	1.36	2.57
Mercury metal ..76 lb. flasks	170.00	171.00	170.00	228.50	95.00	170.00
Mesityl Oxide, f.o.b. dest., tks ....lb.	...	.15	...	.15	.10½	.15
drs, c-l ....lb.	...	.16	...	.16	.11½	.16
drs, lcl ....lb.	...	.16½	...	.16½	.12	.16½
Meta-nitro-aniline ....lb.	.67	.69	.67	.69	.67	.69
Meta-nitro-paratoluidine 200 lb bbls ....lb.	1.05	1.10	1.05	1.40	1.30	1.55
Meta-phenylene diamine 300 lb bbls ....lb.	...	.65	...	.65	.80	.84
Meta-toluene-diamine 300 lb bbls ....lb.	...	.65	.65	.67	.65	.67
Methanol, denat, grd, drs, c-l frt all'd ....gal.	...	.45	...	.45	.41	.46
tks, frt all'd ....gal.	...	.40	...	.40	.35	.40
Pure, drs, c-l, frt all'd' gal.	...	.35½	.35	.38	...	.38
tks ....gal.	...	.30	.30	.33	...	.33
95%, tks ....gal.	...	.29	.28	.31	...	.31
97%, tks ....gal.	...	.30	.29	.32	...	.32
Methyl Acetate, tech tks, delv ....lb.	.06	.07	.06	.07	.06	.06½
55 gal drs, delv ....lb.	.07	.08	.07	.08	.07	.08
C.P. 97-99%, tks,delv lb.	.09½	10½	.09½	.10½	...	.06¼
55 gal drs, delv ....lb.	.10½	.11½	.10½	.11½	.07¼	.07¼
Acetone, frt all'd, drs gal. *p*	...	.37½	.41	.44	.30	.44
tks, frt all'd ....gal. *p*	...	.32	.35	.39	.25	.35
Synthetic, frt all'd, east of Rocky M., drs ....gal. *p*	...	.36	.36	.44	.38	.41
tks, frt all'd ...gal.	...	.34	.34	.36	...	.31½
West of Rocky M., frt all'd, drs..gal. *p*	...	.48	.42	.48	...	.42
tks, frt all'd...gal. *p*	...	.45½	.35	.45½	...	.35
Anthraquinone ....lb.	...	.83	...	.83	...	.83
Butyl Ketone, tks ....lb.	...	.10½	...	.10½	...	.10½
Cellulose, 100 lb lots, frt all'd ....lb.	...	.70	...	.70	...	...
less than 100 lbs. f.o.b. wks ....lb.	...	.75	...	.75	...	...
Chloride, 90 lb. cyl ....lb.	.32	.40	.32	.40	.32	.40
Ethyl Ketone, tks,frt all'd lb.	...	.06	.05½	.06	.05	.05½
50 gal drs, frt all'd' c-l lb	.07	.07½	.06½	.07½	.06	.07
Formate, drs, frt all'd..lb.	...	.89	...	.89	.35	.39
Hexyl, Ketone, pure, drs lb.	...	.60	...	.60	...	.60
Lactate, drs, frt all'd...lb.	...	.80	...	.80	...	.30
Mica, dry grd, bgs, wks..ton	...	30.00	...	30.00	...	30.00
Michler's Ketone, kgs ...lb.	...	2.50	...	2.50	...	2.50
Monoamylamine,c-l,drs,wks lb.	...	.52	...	.52	...	.52
lcl, drs, wks ....lb.	.53	.55	.53	.55	...	...
tks, wks ....lb.	...	.50	...	.50	...	...
Monobutylamine, drs, c-l, wks ....lb.	...	.50	...	.50	.50	.65
lcl, wks ....lb.	.51	.53	.51	.53	...	...
tks, wks ....lb.	...	.48	...	.48	...	...
Monochlorobenzene, see "C"						
Monoethanolamine, tks, wks lb.	...	.23	...	.23	...	.23
Monoethylamine (100% basis) lcl, drs, f.o.b. wks ....lb.	...	.65	...	.65	...	...
Monomethylamine, drs, frt all'd, E Mississippi, c-l lb.	...	.65	...	.65	...	.65
Monomethylparamiosulfate, 100 lb drs ....lb.	3.75	4.00	3.75	4.00	3.75	4.00
Morpholine, drs 55 gal, lcl wks ....lb.	...	.75	...	.75	...	...
Myrobalans 25%, liq bbls lb.	no prices		no prices		.03¾	.04¼
50% Solid, 50 lb boxes lb.	no prices		no prices		.04¾	.05
J1 bgs ....ton	...	37.00	28.50	40.00	24.00	50.00
J2 bgs ....ton	...	30.00	23.00	34.00	19.00	41.00
N						
Naphtha, v.m.&p. (deodorized) see petroleum solvents.						
Naphtha, Solvent, water-whte, tks ....gal.	..	.26	.26	.27	.26	.27
drs, c-l ....gal.	...	.31	.31	.32	.31	.32
Naphthalene, dom, crude bgs. wks ....lb.	2.25	2.50	2.25	2.75	2.25	2.85
imported, cif, bgs ...lb.	no prices		...	3.00	1.50	1.85
Balls, flakes, pks ....lb.	.06¼	.07¾	.06¼	.07¾	.06½	.07½
Balls, ref'd, bbls, wks..lb.	...	.07	.06¾	.07	.05¾	.06¾
Flakes, ref'd, bbls, wks lb.	...	.07	.06¾	.07	.05¾	.06¾
Nickel Carbonate, bbls...lb.	.36	.36½	.36	.36½	.36	.37½
Chloride, bbls ....lb.	.18	.20	.18	.20	.18	.20
Metal ingot ....lb.	.34	.36	.34	.35	...	.35
Oxide, 100 lb kgs, NY lb.	.35	.38	.35	.38	.35	.37
Salt, 400 lb bbls, NY lb.	.13	.13½	.13	.13½	.13	.13½
Nicotine, 40%, drs, sulfate, 55 lb drs ....lb.	...	.70	...	.70	.70	.76
Nitre Cake, blk ....ton	...	16.00	...	16.00	...	16.00
Nitrobenzene redistilled,1000 lb drs, wks ....lb.	.08	.09	.08	.10	.08	.10
tks ....lb.	...	.07	...	.07	.07	.07½
Nitrocellulose, c-l, lcl, wks lb.	.20	.29	.20	.29	.22	.29
Nitrogen Sol. 45½% ammon, f.o.b. Atlantic & Gulf ports, tks, unit ton, N basis	...	1.2158	...	1.2158	...	1.2158
NitrogenousMat'l,bagsimp unit	no prices		2.20	2.60	2.25	2.85
dom, Eastern wks ...unit	...	2.20	2.20	2.90	2.30	3.00
dom. Western wks ...unit	...	1.75	1.95	2.00	1.90	2.25
Nitronaphthalene, 550 lb bbls lb.	.24	.25	.24	.25	.24	.25
Nutgalls Alleppo, bgs ...lb.	.29	.30	.29	.30	.22	.23

a Country is divided in 4 zones, prices varying by zone; *p* Country is divided into 4 zones. Also see footnote directly above; *q* Naphthalene quoted on Pacific Coast F.A.S. Phila., or N. Y.



	Current	Market	1940 Low	1940 High	1939 Low	1939 High
Oak Bark Extract, 25%, bbls lb.	.03⅛	.03⅜	.03⅛	.03⅜	.03⅛	.03½
tks lb.	...	.02¾	...	.02¾	...	.02¾
Octyl Acetate, tks, wks lb.	...	.15	...	.15	.15	.17
Orange-Mineral, 1100 lb cks NY lb.	.11¼	.12¼	.10½	.12	.10¼	.10¾
Orthoaminophenol, 50 lb kgs lb.	2.15	2.25	2.15	2.25	2.15	2.25
Orthoanisidine, 100 lb drs lb.	...	.70	.70	.74	.70	.74
Orthochlorophenol, drs lb.	...	.32	...	.32	...	.32
Orthocresol, 30.4°, drs, wks lb.	.16	.16½	.16	.16½	.14½	.17½
Orthodichlorobenzene, 1000 lb drs lb.	.06	.07	.06	.07	.06	.07
Orthonitrochlorobenzene, 1200 lb drs, wks lb.	.15	.18	.15	.18	.15	.18
Orthonitroparachlorphenol, tins lb.	...	.75	...	.75	...	.75
Orthonitrophenol, 350 lb drs lb.	.85	.90	.85	.90	.85	.90
Orthonitrotoluene, 1000 lb drs, wks lb.	...	.09	...	.09	.08	.10
Orthotoluidine, 350 lb bbls, lcl lb.	...	.19	...	.19	.16	.19
Osage Orange, cryst, bbls lb.	...	.21	...	.21	.17	.25
51° liquid lb.	...	.10	...	.10	.07	.09
P						
Paraffin, rfd, 200 lb bgs						
122-127° M P lb.	...	.057	.02¼	.0675	.03¾	.06¾
128-132° M P lb.	.057	.0595	.057	.0705	.04	.0705
133-137° M P lb.	.06¼	.06½	.06¼	.0755	.0465	.0755
Para aldehyde, 99%, tech, 110-55 gal drs, wks lb.	.10	.11¼	.10	.11¼	.10	.16*
Aminoacetanilid, 100 lb kgs lb.	...	.85	...	.85	...	.85
Aminohydrochloride, 100 lb kgs lb.	1.25	1.30	1.25	1.30	1.25	1.30
Aminophenol, 100 lb kgs lb.	...	1.05	...	1.05	...	1.05
Chlorophenol, drs lb.	...	.32	...	.32	.30	.45
Dichlorobenzene 200 lb drs, wks lb.	.11	.12	.11	.12	.11	.12
Formaldehyde, drs, wks lb.	.23	.24	.34	.35	.34	.35
Nitroacetanilid, 300 lb bbls lb.	.45	.52	.45	.52	.45	.52
Nitroaniline, 300 lb bbls, wk lb.	...	.47	...	.47	.45	.47
Nitrochlorobenzene, 1200 lb drs, wks lb.	...	.15	.15	.16	.15	.16
Nitro-orthotoluidine, 300 lb bbls lb.	2.75	2.85	2.75	2.85	2.75	2.85
Nitrophenol, 185 lb bbls lb.	...	.35	.35	.37	.35	.37
Nitrosodimethylaniline, 120 lb bbls lb.	.92	.94	.92	.94	.92	.94
Nitrotoluene, 350 lb bbls lb.	...	.30	...	.30	.30	.35
Phenylenediamine, 350 lb bbls lb.	1.25	1.30	1.25	1.30	1.25	1.30
Toluenesulfonamide, 175 lb bbls lb.	...	.70	.70	.75	.70	.75
tks, wks lb.	...	.31	...	.31	...	.31
Toluenesulfonchloride, 410 lb bbls, wks lb.	.20	.22	.20	.22	.20	.22
Toluidine, 350 lb bbls, wks lb.	...	.48	.48	.50	.48	.58
Paris Green, dealers, drs lb.	.23	.25	.23	.26	.23	.26
Pentane, normal, 28-38° C, group, 3 tks gal.	...	.08½	...	.08½	...	.08½
drs, group 3 gal.	.11½	.16	.11½	.16	.11½	.16
Perchlorethylene, 100 lb drs, frt all'd lb.	.08	.08½	.08	.08¾	.08	.10½
Petrolatum, dark amber, bbls. lb.	...	.02¾	.02¾	.05	.02⅝	.05
White, lily, bbls lb.	...	.04¾	.04¾	.08½	.05¼	.08½
White, snow, bbls lb.	...	.05½	.05½	.09½	.06¼	.09½
Petroleum Ether, 30-60°, group 3, tks gal.	...	.13½	...	.13½	.13	.13½
drs, group 3 gal.	...	.14½	.14½	.25½	.14	.25½
PETROLEUM SOLVENTS AND DILUENTS						
Cleaners naphthas, group 3, tks, wks gal.	06⅞	.07	.06⅞	.07	.06⅜	.07
East Coast, tks wks gal.	.09	.10½	.09	.10½	.09	.10
Lacquer diluents, tks, East Coast gal.	.09½	.10	.09½	.10	.09	.12½
Group 3, tks gal.	...	.07⅜	.07⅜	.07⅞	.07⅜	.08
Naphtha, V.M.P., East tks, wks gal.	...	.09½	.09½	.10	.09	.10
Group 3, tks, wks gal.	.06⅞	.07	.06⅜	.07⅞	.06⅜	.07
Petroleum thinner, 43-47, East, tks, wks gal.	.08¾	.09½	.08¾	.09½	.08½	.10
Group 3, tks, wks gal.	...	.05⅞	.05⅞	.07	.05⅜	.06
Rubber Solvents, stand grd, East, tks, wks gal.	...	.09½	.09½	.10	.09	.10
Group 3, tks, wks gal.	.06⅞	.07	.06⅜	.07⅞	.06⅜	.07
Stoddard Solvents, East, tks, wks gal.	.08¾	.09½	.08¾	.09½	.08½	.10
Group 3, wks gal.	.06⅜	.06½	.06⅜	.06½	.05⅞	.06½
Phenol, 250-100 lb drs lb.	.13	.14¾	.13	.14¾	.13	.15½
tks, wks lb.	...	.12	...	.12	.12	.13½
Phenyl-Alpha-Naphthylamine, 100 lb kgs lb.	...	1.35	...	1.35	...	1.35
Phenyl Chloride, drs lb.	...	.17	...	.17	...	.17
Phenylhydrazine Hydrochloride, com lb.	...	1.50	...	1.50	...	1.50
Phloroglucinol, tech, tins lb.	15.00	16.50	15.00	16.50	15.00	16.50
CP, tons lb.	20.00	22.00	20.00	22.00	20.00	22.00

* These prices were on a **delivered basis.**

	Current Market		1940 Low	1940 High	1939 Low	1939 High
Phosphate Rock, f.o.b. mines						
70% basis ....ton	...	2.15	1.85	1.90	...	1.85
72% basis ....ton	...	2.40	2.15	2.35	...	2.35
Florida Pebble, 68% basis ton	...	1.90	1.90	2.85	...	2.85
75-74% basis ......ton	...	2.90	2.90	3.85	...	3.85
Tennessee, 72% basis..ton	...	4.50	...	4.50	...	4.50
Phosphorus Oxychloride 175 lb cyl ....lb.	.15	.18	.15	.20	.16	.20
Red, 110 lb cases ......lb.	.40	.44	.40	.44	.40	.44
Sesquisulfide, 100 lb cs..lb.	.38	.42	.38	.44	.38	.44
Trichloride, cyl ....lb.	.15	.16	.15	.18	.15	.18
Yellow, 110 lb cs, wks lb.	.18	.20	.18	.20	.24	.30
Phthalic Anhydride, 100 lb drs, wks ....lb.	.14½	.15½	.14½	.15½	...	.14½
Pine Oil, 55 gal drs or bbls						
Destructive dist ....lb.	.50	.55	.53	.56	.46	.48
Steam dist wat wh bbls gal.	...	.59	...	.59	...	.59
tks ....gal.	...	.54	...	.54	...	.54
Pitch Hardwood, wks ...ton	23.75	24.00	23.75	24.00	23.75	24.00
Coaltar, bbl, wks......ton	...	19.00	...	19.00	...	19.00
Burgundy, dom, bbls, wks lb.	.05½	.06	.05½	.06½	.05½	.06½
Imported ....lb.	no prices		no prices		.15	.16
Petroleum, see Asphaltum in Gums' Section.						
Pine, bbls ....bbl.	6.00	6.50	6.00	6.50	6.00	6.25
Platinum, ref'd ....oz.	34.00	36.00	35.00	40.00	32.00	40.00
POTASH						
Potash, Caustic, wks, sol..lb.	.06¼	.06¾	.06¼	.06¾	.06¼	.06½
flake ....lb.	.07	.07½	.07	.07½	.07	.07⅜
liquid, tks ....lb.	...	.02⅞	.02⅞	.03¾	...	.02⅞
Manure Salts, imported 30% basis, blk .....unit	...	.53½	.53½	.58½	...	.58½
Potassium Abietate, bbls ..lb	...	.08	.08	.09	...	.09
Acetate, tech, bbls, delv lb.	...	.26	...	.26	...	.26
Bicarbonate, USP, 320 lb bbls ....lb.	...	.17	...	.18	...	.18
Bichromate Crystals, 725 lb cks* ....lb.	.08⅞	.09¼	.08¾	.09¼	.08¾	.09¼
Binoxalate, 30 lb bbls ..lb.	...	.23	...	.23	...	.23
Bisulfate, 100 lb kgs ...lb.	.15½	.18	.15½	.18	.15½	.18
Carbonate, 80-85% calc 800 lb cks ....lb.	.06½	.06¾	.06½	.07	.06½	.07
liquid, tks ....lb.	...	.0275	.0275	.03	...	.02⅞
drs, wks ....lb.	.03	.03⅛	.03	.03½	.03	.03½
Chlorate crys, 112 lb kgs, wks ....lb.	...	.11	.10½	.13	.09¼	.13
gran, kgs ....lb.	.12	.14½	.12	.14½	.12	.14½
powd, kgs ....lb.	...	.10	.10	.12½	.08½	.12½
Chloride, crys, bbls ...lb.	.04	nom.	.04	.04¾	.04	.04¾
Chromate, kgs ....lb.	.24	.27	.24	.27	.19	.28
Cyanide, 110 lb cases...lb.	...	.75	...	.75	.50	.55
Iodide, 250 lb bbls .....lb.	...	1.20	...	1.35	1.13	1.35
Metabisulfite, 300 lb bbls lb.	no prices		.13	.15	.11	.18
Muriate, bgs, dom, blk unit	...	.53½		.53½		.53½
Oxalate, bbls ....lb.	.25	.26	.25	.26	.25	.26
Perchlorate, kgs, wks...lb.	.09½	.11	.09½	.11	.09	.10½
Permanganate, USP, crys, 500 & 1000 lb drs, wks lb.	.18½	.19	.18½	.19½	.18½	.19½
Prussiate, red, bbls ....lb.	nom.	.45	.38	.45	.30½	.45
Yellow, bbls ....lb.	.17	.19	.15	.16	.14	.16
Sulfate, 90% basis, bgs ton	...	36.25	34.25	36.25	36.25	38.00
Titanium Oxalate, 200 lb bbls ....lb.	.40	.45	.40	.45	.35	.45
Pot & Mag Sulfate, 48% basis bgs ....ton	...	27.00	24.75	27.00	24.75	25.75
Propane, group 3, tks ...lb.	.03¾	.04	.03	.04⅛	.03	.04⅛
Putty, com'l, tubs ...100 lb.	...	3 15	...	6.00	3.00	6.00
Linseed Oil, kgs ...100 lb.	...	5.00	...	4.50	...	4.50
Pyrethrum, conc liq:						
2.4% pyrethrins, drs, frt all'd ....gal.	...	4.95	4.95	7.50	5.75	7.50
3.6% pyrethrins, drs, frt all'd ....gal.	...	7.35	7.35	11.00	8.45	11.00
Flowers, coarse, Japan, bgs ....lb.	.23	.24	.23	.36	.26	.36
Fine powd, bbls .....lb.	.25	.26	.25	.37	.27	.37
Pyridine, denat, 50 gal drs gal.	...	1.71	...	1.71	1.63	1.71
Refined, drs ....lb.	...	.51	...	.51	.50	.51
Pyrites, Spanish cif Atlantic ports, blk ....unit	.12	.13	.12	.13	.12	.13
Pyrocatechin, CP, drs, tins lb.	2.15	2.40	2.15	2.40	2.15	2.75
Q						
Quebracho, 35% liq tks ..lb.	...	.03½	.03¼	.03½	.02⅞	.03⅜
450 lb bbls, c-l ......lb.	...	.04	...	.04	.04	.04⅛
Solid, 63%, 100 lb bales cif ....lb.	...	.04½	...	.04½	.04	.04½
Clarified, 64% bales .lb.	...	.04¾	...	.04¾	.04¼	.04¾
Quercitron, 51 deg liq, 450 lb bbls ....lb.	.08½	.09½	.08½	.09½	.07½	.08½
Solid, drs ....lb.	.11	.16½	.10	.16½	.10	.12
R						
R Salt, 250 lb bbls, wks lb.	...	.55	...	.55	...	.55
Resorcinol, tech, cans ...lb.	.68	.74	.75	.80	.75	.80
Rochelle Salt, cryst .....lb.	.25¾	.26¼	.22¼	.23¼	.17¾	.21¾
Powd, bbls ....lb.	.24¾	.25¼	.21¾	.22¼	.16¾	.20¼
Rosin Oil, bbls, first run gal.	.45	.50	...	.50	.45	.47
Second run ....gal.	.51	.56	.52	.56	.47	.49
Third run, drs ....gal.	.52	.57	.56	.57	.51	.53
Rosins 600 lb bbls, 100 lb unit ex. yard NY:***						
B	...	2.45	1.80	2.45	4.60	5.45
D	...	2.48	1.87	2.48	4.95	5.70
E	...	2.51	1.95	2.51	5.20	6.40
F	...	2.51	2.10	2.51	5.50	6.75
G	...	2.48	2.10	2.48	5.75	7.00
H	2.45	2.48	2.10	2.48	5.75	7.10
I	2.48	2.50	2.10	2.50	5.77½	7.20

* Spot prices are ⅛c higher; *** Oct. 31—1939, high and low based on 280 lb. unit.

	Current Market		1940 Low	1940 High	1939 Low	1939 High
Rosins (continued)						
K	...	2.56	2.12	2.56	5.80	7.20
M	...	2.61	2.20	2.61	5.90	7.25
N	...	2.65	2.39	2.65	6.75	7.40
WG	...	3.03	2.68	3.03	6.95	7.70
WW	...	3.40	3.00	3.40	7.45	8.50
Rosins, Gum, Savannah (280 lb unit):**						
B	...	1.80	1.15	1.80	3.25	4.00
D	...	1.83	1.22	1.83	3.55	4.30
E	...	1.86	1.30	1.86	3.80	5.00
F	...	1.86	1.45	1.86	4.00	5.35
G	...	1.83	1.45	1.83	4.40	5.70
H	1.80	1.83	1.45	1.83	4.40	5.70
I	1.80	1.85	1.45	1.85	4.40	5.80
K	...	1.91	1.47	1.91	4.40	5.80
M	...	1.96	1.55	1.96	4.40	5.85
N	...	2.00	1.70	2.00	5.10	6.00
WG	...	2.38	2.03	2.38	5.60	6.30
WW	...	2.75	2.25	2.75	6.05	7.10
X	...	2.75	2.35	2.75	5.60	7.10
Rosin, Wood, c-l, FF grade, NY	1.40	1.54	1.40	1.54	5.35	6.80
Rotten Stone, bgs mines ton	**25.50**	**37.50**	**25.50**	**37.50**	**22.50**	**37.50**
Imported, lump, bbls ... lb.	no prices		...	.14	...	.14
Powdered, bbls ...... lb.	no prices		.08½	.10	.08½	.10
S						
Sago Flour, 150 lb bgs .. lb.	.03½	.04	.04	.04½	.02½	.04½
Sal Soda, bbls wks ... 100 lb.	...	1.20	...	1.20	...	1.20
Salt Cake, 94-96%, c-l. bulk wks ...... ton	...	17.00	...	17.00	19.00	25.00
Chrome, c-l, wks ...... ton	...	16.00	11.00	16.00	11.00	12.00
Saltpetre, gran, 450-500 lb bbls ...... lb.	...	.07¾	.071	.07¾	.06½	.069
Cryst, bbls ...... lb.	...	.08¾	.081	.08¾	.07½	.0865
Powd, bbls ...... lb.	...	.08¾	.081	.08¾	.07½	.079
Satin, White, pulp, 550 lb bbls ...... lb.	.01¼	.01½	.01¼	.01½	.01¼	.01½
Schaeffer's Salt, kgs ..... lb.	...	.46	.46	.48	.46	.48
Shellac, Bone dry, bbls .. lb. r	.23	.24	.23	.26	.18	.26
Garnet, bgs ...... lb.	.18½	.19	.18½	.23	.12½	.20
Superfine bgs ...... lb. t	.14½	.17½	.14½	.20½	.10	.21
T. N., bgs ...... lb. t	.14	.17½	.13½	.19½	.09½	.20
Silver Nitrate, vials ..... oz.	...	.26⅞	.26⅞	.27⅜	.26⅞	.33½
Slate Flour, bgs, wks .... ton	9.00	10.00	9.00	10.00	9.00	10.00
Soda Ash, 58% dense, bgs, c-l, wks ...... 100 lb.	...	1.10	...	1.10	...	1.10
58% light, bgs ..... 100 lb.	1.05	1.08	1.05	1.08	...	1.08
blk ...... 100 lb.	...	.90	...	.90	...	.90
paper bgs ...... 100 lb.	...	1.05	...	1.05	...	1.05
bbls ...... 100 lbs.	...	1.35	...	1.35	...	1.35
Caustic, 76% grnd & flake, drs ...... 100 lb.	...	2.70	...	2.70	...	2.70
76% solid, drs .... 100 lb.	...	2.30	...	2.30	2.10	2.30
Liquid sellers, tks ... 100 lb.	...	1.95	1.95	1.97½	...	1.97½
Sodium Abietate, drs .... lb.	...	.11	...	.11	...	.11
Acetate, 60% tech, gran, powd, flake, 450 lb bbls wks ...... lb.	.04	.05	.04	.05	.04	.05
90%, bbls, 275 lb delv lb.	.06	.06¾	.06	.06¾	...	...
anhyd, drs, delv ..... lb.	.08¼	.10	.08¼	.10	.08¼	.10
Alginate, drs ...... lb.	.39	.70	.39	.96	.70	.95
Antimoniate, bbls ..... lb.	.14½	.15	.14½	.15	.11½	.16
Arsenate, drs ...... lb.	.07	.08¾	.07	.08¾	.08	.08½
Arsenite, liq, drs .... gal.	...	.35	...	.35	.30	.35
Dry, gray, drs, wks .. lb.	.06½	.09¼	.06½	.09½	.07½	.09½
Benzoate, USP kgs ... lb.	.46	.50	.46	.52	.46	.48
Bicarb, powd, 400 lb bbl, wks ...... 100 lb.	...	1.70	1.70	1.85	...	1.85
Bichromate, 500 lb cks, wks* ...... lb.	.06⅞	.07¼	.06¾	.07¼	.06¾	.07¼
Bisulfite, 500 lb bbls, wks lb.	.03	.031	.03	.031	.031	.036
35-40% sol bbls, wks 100 lb.	1.30	1.80	1.30	1.80	1.40	1.80
Chlorate, bgs, wks ..... lb.	...	.06¼	.06¼	.08½	.06¼	.07½
Cyanide, 96-98%, 100 & 250 lb drs, wks ..... lb.	.14	.15	.14	.15	.14	.15
Diacetate, 33-35% acid, bbls, lcl, delv ...... lb.	...	.09	.08½	.09	...	.09
Fluoride, white 90%, 300 lb bbls, wks ...... lb.	.07	.08	.07	.08	.07	.08¾
Hydrosulfite, 200 lb bbls, f.o.b. wks ...... lb.	.16	.17	.16	.17	.16	.17
Hyposulfite, tech, pea crys 375 lb bbls, wks 100 lb.	...	2.80	2.80	3.05	...	2.80
Tech, reg cryst, 375 lb bbls, wks ...... 100 lb.	2.45	...	2.45	2.80	2.45	2.80
Iodide, jars ...... lb.	...	2.42	2.30	2.42	...	2.30
Metanilate, 150 lb bbls .. lb	.41	nom.	.41	.42	.41	.42
Metasilicate, gran, c-l, wks ...... 100 lb.	...	2.35	...	2.35	2.20	2.35
cryst, drs, c-l, wks 100 lb.	..	3.05	...	3.05	2.90	3.05
Anhydrous, wks, cl, drs ...... 100 lb.	3.75	3.75	3.75	3.75	3.75	3.75
wks, lcl, drs, .. 100 lb.	5.05	5.05	5.05	5.05	5.05	5.05
Monohydrated, bbls ... lb.	..	.023	..	.023		.023
Naphthenate, drs ...... lb.	.12	.19	.12	.19	.12	.19
Naphthionate, 300 lb bbl lb.	...	.50	...	.50	.50	.54
Nitrate, 92% crude, 200 lb bgs, c-l, NY ...... ton	...	28.70	...	28.30	...	28.30
100 bgs, same basis . ton	...	29.40	...	29.00	...	29.00
Bulk ...... ton		27.00	...	27.00	...	27.00
Nitrite, 500 lb bbls .... lb.	.06¾	.11½	.06¾	.11½	.06¾	.11½
Othochlorotoluene, sulfonate, 175 lb bbls, wks lb.	.25	.27	.25	.27	.25	.27
Orthosilicate, 300 lb drs, c-l ...... lb.	...	.03	...	.03	...	.03
Perborate, drs, 400 lb .. lb.	.14¾	.15¼	.14¾	.15¼	.14¾	.15¼

r Bone dry prices at Chicago 1c higher; Boston ½c; Pacific Coast 2c; Philadelphia deliveries f.o.b. N. Y.; refined 6c higher in each case: t T. N. and Superfine prices quoted f.o.b. N. Y. and Boston; Chicago prices 1c higher; Pacific Coast 3c; Philadelphia f.o.b. N. Y. *Spot price is ⅛c higher. ** Oct. 31—1939, high and low based on 280 lb. unit.

	Current Market		1940 Low	1940 High	1939 Low	1939 High
Sodium (continued):						
Peroxide, bbls, 400 lb . . lb.	. . .	.17	. . .	.17	. . .	.17
Phosphate, di-sodium, tech, 310 lb bbls, wks 100 lb.	. . .	2.30	. . .	2.30	2.05	2.30
bgs, wks . . . . . 100 lb.	. . .	2.10	. . .	2.10	1.85	2.10
Tri-sodium, tech, 325 lb. bbls, wks . . . . . . 100 lb.	. . .	2.45	. . .	2.45	2.20	2.45
bgs, wks . . . . . . 100 lb.	. .	2.25	. . .	2.25	2.00	2.25
Picramate, 160 lb kgs . . lb.	. . .	.65	.65	.67	.65	.67
Prussiate, Yellow, 350 lb. bbls, wks . . . . lb.	.10½	.10¾	.09½	.10¾	.09½	.10¾
Pyrophosphate, anhyd, 100 lb bbls f.o.b. wks frt eq lb.	. . .	.051	. . .	.0530	. . .	.0530
Sesquisilicate, drs, c-l, wks . . . . 100 lb.	. .	2.90	. .	2.90	2.80	2.90
Silicate, 60°, 55 gal drs, wks . . . . 100 lb.	1.40	1.80	1.40	1.80	1.65	1.70
40°, 55 gal drs, wks 100 lb	. . .	.80	. . .	.80	. . .	.80
tks, wks . . . . . . 100 lb.	. . .	.65	. . .	.65	. . .	.65
Silicofluoride, 450 lb bbls NY . . . . lb.	no prices		no prices		.03½	.04¾
Stannate, 100 lb drs . . . lb.	no prices		.31½	.34½	.30	.35
Stearate, bbls . . . . lb.	.19	.24	.19	.24	.19	.24
Sulfanilate, 400 lb bbls lb.	.16	.18	.16	.18	.16	.18
Sulfate, Anhyd, 550 lb bgs c-l, wks . . . . 100 lb. †	1.45	1.65	1.45	1.90	1.45	1.90
Sulfide, 80% cryst, 440 lb. bbls, wks . . . . lb.	.02¼	.03	.02¼	.03	.02¼	.02½
Solid, 650 lb drs, c-l, wks . . . . lb.	.03	.03¾	.03	.03¾	.03	.03½
Sulfite, powd, 400 lb bbls wks . . . . lb.	. . .	.05¼	.023	.05¼	.023	.02½
Sulfocyanide, drs . . . . . . lb.	.28	.47	.28	.47	.28	.47
Sulforicinoleate, bbls . . . . lb.	. . .	.12	. . .	.12	. . .	.12
Supersilicate (see sodium sesquisilicate)						
Tungstate, tech, crys, kgs lb.	no prices		no prices		1.05	1.10
Sorbitol, com, solut, wks c-l, drs, wks . . . . lb.	. . .	.14¾	.14¾	.16	. . .	.15½
Spruce, Extract, ord, tks . . lb.	. . .	.01⅛	. . .	.01⅛	. . .	.01⅛
Ordinary, bbls . . . . . lb.	. . .	.01⅝	. . .	.01⅝	. . .	.01⅝
Super spruce ext, tks . . . lb.	. . .	.01⅛	. . .	.01⅛	. . .	.01⅛
Super spruce ext, bbls . . lb.	. . .	.01⅞	. . .	.01⅞	. . .	.01⅞
Super spruce ext. powd, bgs . . . . lb.	. . .	.04	. . .	.04	. . .	.04
Starch, Pearl, 140 lb bgs 100 lb.	. . .	2.90	2.50	2.95	2.40	2.85
Powd, 140 lb bgs . . . 100 lb.	. . .	3.00	2.60	3.05	2.50	2.90
Potato, 200 lb bgs . . . . . lb.	.05	.06	.05	.07½	.04	.06¾
Imp, bgs . . . . lb.	no prices		. . .	.06½	.05	.06½
Rice, 200 lb bbls . . . . lb.	.07½	.08½	.07¼	.08½	.06¼	.07¼
Sweet Potato, 240 lb bbls, f.o.b. plant . . . . . . 100 lb.	nom.	7.00	5.50	7.00	5.50	7.50
Wheat, thick, bgs . . . . . lb.	. . .	.05	.05¼	.05½	.05	.05½
Strontium, carbonate, 600 lb bbls, wks . . . . lb.	no prices		.22	.23	.16	.24
Nitrate, 600 lb bbls, NY lb.	.07¾	.08¾	.07¾	.08¾	.07¾	.08¼
Sucrose, octa-acetate, den, grd, bbls, wks . . . . . . lb.	. . .	.45	. . .	.45	. . .	.45
tech, bbls, wks . . . . lb.	. . .	.40	. . .	.40	. . .	.40
Sulfur, crude, f.o.b. mines ton		16.00	. . .	16.00	.	16.00
Flour, com'l, bgs . . . 100 lb.	1.40	1.95	1.40	2.35	1.65	2.35
bbls . . . . 100 lb	1.95	2.70	1.95	2.70	1.95	2.70
Rubbermakers, bgs . . 100 lb.	. . .	2.00	2.00	2.80	2.20	2.80
bbls . . . . 100 lb.	. . .	2.35	2.35	3.15	2.55	3.15
Extra fine, bgs . . . . . 100 lb.	. . .	2.35	2.85	3.00	2.85	3.00
Superfine, bgs . . . . . 100 lb.	2.65	2.80	2.65	2.80	2.65	2.80
bbls . . . . 100 lb.	2.25	3.10	2.25	3.10	2.25	3.10
Flowers, bgs . . . . . . 100 lb.	2.80	3.35	2.80	3.75	3.00	3.75
bbls . . . . 100 lb.	3.15	3.70	3.15	4.10	3.35	4.10
Roll, bgs . . . . 100 lb.	2.15	2.70	2.15	3.10	2.35	3.10
bbls . . . . 100 lb.	2.30	2.85	2.50	3.25	2.50	3.25
Sulfur Chloride, 700 lb drs, wks . . . . lb.	.03	.08	.03	.08	.03	.04
Sulfur Dioxide, 150 lb cyl lb.	.07	.09	.07	.09	.07	.09
Multiple units, wks . . . . lb.	.04½	.07	.04½	.07	.04½	.07
tks, wks . . . . lb.	.04	.06	.04	.06	.04	.05
Refrigeration, cyl, wks lb.	.16	.40	.16	.40	.16	.17
Multiple units, wks . . . lb.	.07½	.10	.07½	.10	.07½	.10
Sulfuryl Chloride . . . . lb.	.15	.40	.15	.40	.15	.40
Sumac, Italian, grd . . . . . ton	no prices		98.00	140.00	65.50	85.00
Extract, 42°, bbls . . . . . lb.	.06	.06¼	.06	.06¼	.05¼	.06¼
Superphosphate, 16% bulk, wks . . . . ton	. . .	8.50	8.50	9.00	8.00	9.00
Run of pile . . . . ton	. . .	8.00	8.00	8.50	7.50	8.50
Triple, 40-48%, a.p.a. bulk, wks, Balt. unit . . . . . ton	. . .	.68	.68	.70	. .	.70
T						
Talc, Crude, 100 lb bgs, NY ton	14.00	16.00	14.00	15.00	13.00	15.00
Ref'd 100 lb bgs, NY ton	17.25	19.25	14.00	17.25	14.00	16.00
French, 220 lb bgs, NY ton	no prices		23.00	35.00	23.00	30.00
Ref'd, white bgs, NY ton	no prices		45.00	60.00	45.00	60.00
Italian, 220 lb bgs to arr ton	no prices		64.00	70.00	60.00	70.00
Ref'd', white bgs, NY ton	no prices		65.00	78.00	65.00	70.00
Tankage, Grd, NY . . . unit §	. . .	2.50	2.35	3.25	2.75	3.25
Ungrd . . . . unit §	. . .	2.50	2.35	3.25	2.75	5.00
Fert grade, f.o.b. Chgo unit §	. . .	2.50	2.20	3.50	2.50	4.50
South American cif unit §	. . .	2.60	2.50	3.50	3.00	4.00
Tapioca Flour, high grade, bgs . . . . lb.	.03	.05	.02¾	.05	.01¾	.05½
Tar Acid Oil, 15%, drs . . gal.	.22	.24	.22	.24	.21	.24
25% drs . . . . gal.	.25	.27	.25	.28	.25	.28
Tar, pine, delv, drs . . . . . . gal.	.26	.27	.26	.27	.25	.27
tks, delv, E. cities . . . . gal.		.21	. . .	.21	.20	.21
Tartar Emetic, tech, bbls lb.	.34¼	nom.	.34¾	.35	.27¾	.35
USP, bbls . . . . lb.	.40	nom.	. . .	.40	.33	.40
Terpineol, den grade, drs lb.	.	.17	. . .	.17	. . .	.17
Tetrachlorethane, 650 lb drs lb.	.08	.08½	.08	.08½	.08	.08½
Tetrachlorethylene, drs, tech lb.	.08	.09	.08	.09½	. . .	.09½
Tetralene 50 gal drs, wks lb.	. .	.18	.12	.18	.12	.13
Thiocarbanilid, 170 lb bbls lb.	.	.24	.20	.25	.20	.25

† Bags 15c lower; § + 10

	Current Market		1940 Low	1940 High	1939 Low	1939 High
Tin, crystals, 500 lb bbls, wks lb.	.38½	.39	.36	.40½	.35½	.39
Metal, NY . . . . lb.	* . . .	.51¼	.45½	.55	.45½	.60
Oxide, 300 lb bbls, wks lb.	.54	.56	.51	.56	.50	.54
Tetrachloride, 100 lb drs, wks . . . . lb.	. . .	.25	.23	.26½	.23	.32
Titanium Dioxide, 300 lb bbls lb.	.13¼	.14	.13	.16	.13¼	.16
Barium Pigment, bbls . . lb.	.05¼	.06½	.05¼	.06½	.05⅝	.06½
Calcium Pigment, bbls lb.	.05¼	.06¼	.05	.06¼	.05⅜	.06½
Titanium tetrachloride, drs. f.o.b. Niagara Falls . . . . lb.	.32	.45	.32	45	.32	.45
Titanium trichloride 23% sol. bbls f.o.b. Niagara Falls lb.	.22	.26	.22	.26	.22	.26
20% solution, bbls . . . . lb.	.175	.215	.175	.215	.175	.215
Toluidine, mixed, 900 lb drs, wks . . . . lb.	. . .	.26	.26	.27	.26	.27
Toluol, 110 gal drs, wks gal.	. . .	.32	.27	.32	. . .	.27
8000 gal tks, frt all'd gal.	. . .	.27	.22	.27	. . .	.22
Toner Lithol, red, bbls . . lb.	.55	.60	.55	.60	.55	.80
Para, red, bbls . . . . lb.	.70	.75	.70	.75	.70	.80
Toluidine, bgs . . . . lb.	. . .	1.05	1.05	1.35	. . .	1.35
Triacetin, 50 gal drs, wks, lb.	. . .	.26	. . .	.26	. . .	.26
Triamyl Borate, lcl, drs, wks lb.	. . .	.27	. . .	.27	. . .	.27
Triamylamine, c-l, drs, wks lb.	. . .	.77	. . .	.77	.77	1.25
lcl, wks, drs . . . . lb.	.78	.80	.78	.80	. . .	. . .
tks, wks . . . . lb.	. . .	.75	. . .	.75	. . .	. . .
Tributylamine, lcl, drs, wks lb.	. . .	.07	.67	.70	. . .	.70
c-l, drs, wks . . . . lb	. . .	.07½	.66	.67	. . .	. . .
tks, wks . . . . lb.	. . .	.06½	. . .	.65	. . .	. . .
Tributyl citrate, drs, frt all'd lb.	.24	.26	.24	.35	.35	.45
Tributyl Phosphate, frt all'd lb.	. . .	.42	. . .	.42	. . .	.42
Trichlorethylene, 600 lb drs, frt all'd E. Rocky Mts lb.	.08	.09	.08	.09	.08	.09½
Tricresyl phosphate, tech, drs, lb.	.22	.36½	.22	.36½	.22	.37½
Triethanolamine, 50 gal drs wks . . . . lb.	. . .	.19	.19	.22	.21	.22
tks, wks . . . . lb.	. . .	.18	.18	.20	. . .	.20
Triethylamine, lcl, drs, f.o.b. wks . . . . lb.	. . .	1.05	. . .	1.05	. . .	
Triethylene glycol, drs, wks lb.	. . .	.26	. . .	.26	. . .	.26
Trihydroxyethylamine Oleate, bbls . . . . lb.	. . .	.30	. . .	.30	. . .	.30
Stearate bbls . . . . lb.	. . .	.30	. . .	.30	. . .	.30
Trimethyl Phosphate, drs, lcl, f.o.b. dest . . . . lb.	. . .	.50	. . .	.50	. . .	.50
Trimethylamine, c-l, drs, frt all'd E. Mississippi . . . lb.	. . .	1.00	. . .	1.00	. . .	1.00
Triphenylguanidine, ... lb.	.58	.60	.58	.60	.58	.60
Triphenyl Phosphate, drs . . lb.	. . .	.38	. . .	.38		.38
Tripoli, airfloated, bgs, wks ton	. . .	26.00	26.00	30.00	26.00	30.00
Turpentine (Spirits), c-l, NY dock, bbls . . . . gal.	. . .	.43¾*	.32½	.40	.29	.35
Savannah, bbls . . . . gal.	. . .	.32¾*	.26½	.34	.23½	.29
Jacksonville, bbls . . . . . gal.	no prices		.26	.34¾	.23½	.26¾
Wood Steam dist, drs, c-l, NY . . . . gal.	nom.	.38*	.27	.34½	.242	.34
Wood, dest dist, l-c-l, drs, delv E. cities . . . . . . gal.	nom.	.41*	.23	.32	.22	.25
U						
Urea, pure 112 lb cases . lb.	. . .	.12	.12	.15½	.14½	.15½
Fert grade, bgs, c. i. f. S.A. points . . . . ton	no prices		. . .	110.00	95.00	110.00
Dom f.o.b., wks . . . . . . ton	. . .	85.00	85.00	101.00	95.00	101.00
Urea Ammonia, liq., nitrogen basis . . . . ton	. . .	121.50	. . .	121.50	. . .	. . .
V						
Valonia beard, 42%, tannin bgs . . . . ton	no prices		47.00	56.00	45.00	57.00
Cups, 32% tannin bgs . . ton	no prices		33.00	39.00	27.00	39.00
Extract, powd, 63% . . . lb.	no prices		.0565	.06	.05	.06
Vanillin, ex eugenol, 25 lb tins, 2000 lb lots . . . . lb.	. . .	2.60	. . .	2.60	2.20	2.60
Ex-guaiacol . . . . lb.	. . .	2.50	. . .	2.50	2.10	2.50
Ex-lignin . . . . lb.	. . .	2.50	. . .	2.50	2.10	2.50
Vermilion, English, kgs . . . lb.	no prices		. . .	2.76	1.50	2.97
W						
Wattle Bark, bgs . . . . ton	37.50	39.50	34.00	38.75	34.50	40.00
Extract, 60°, tks, bbls . . lb.		.03⅞	.03⅞	.04¼	.04	.05½
Wax, Bayberry, bgs . . . . . lb.	.20	.21	.25	.30	.16⅞	.39
Bees, bleached, white 500 lb slabs, cases . . . . . . lb.	. . .	.36½	.35	.38	.33	.40½
Yellow, African, bgs . . lb.	. . .	.29	.23	.29	.18½	.30
Brazilian, bgs . . . . . lb.	.30	.31	.24	.31	.21	.33
Refined, 500 lb slabs, cases lb.	.35	.36	.29	.36	.25½	.36
Candelilla, bgs . . . . lb.	.19	.20	.18	.19	.15¼	.19
Carnauba, No. 1, yellow, bgs . . . . lb.	.71	.72	.58	.85	.36¾	.78
No. 2, yellow, bgs . . . lb.	.70	.71	.57	.84	.35¾	.45
No. 2, N. C., bgs . . . lb.	.66	.67	.46	.73	.34	.41
No. 3, Chalky, bgs . . . lb.	.59	.60	.43	.66	.27½	.46
No. 3, N. C., bgs . . . lb.	.59	.60	.47	.68	.28¾	.49
Ceresin, dom, bgs . . . . . lb	.11	.11½	.11½	.15	.08½	.15
Japan, 224 lb cases . . . . lb.	.18	.18½	.15½	.16½	.09¾	.18
Montan, crude, bgs . . . . lb.	no prices		no prices		.11	.11¾
Paraffin, see Paraffin Wax.						
Spermaceti, blocks, cases lb.	.22	.23	.22	.25	.18	.25
Cakes, cases . . . . lb.	.23	.24	.23	.25	.19	.26
Whiting, chalk, com 200 lb bgs, c-l, wks . . . . ton	16.00	20.00	12.00	20.00	12.00	14.00
Gilders, bgs, c-l, wks . . ton	. . .	11.50	11.50	18.50	. . .	15.00
Wood Flour, c-l, bgs . . . . ton	24.00	25.00	20.00	30.00	20.00	30.00
Xylol, frt all'd, East 10° tks, wks . . . . gal.	. . .	.29	. . .	.30	.29	.30
Com'l tks, wks, frt all'd, gal	. . .	.26	. . .	.27	.26	.27
Xylidine, mixed crude, drs lb.	.35	.36	.35	.36	.35	.36
Zein, bgs, 1000 lb lots, wks . . . . lb.	. . .	.20	. . .	.20	. . .	. . .

* Oct. 31. ‡ May 31.

Current

Zinc Acetate
Oil, Whale

	Current Market		1940 Low	1940 High	1939 Low	1939 High
Zinc Acetate, tech, bbls, lcl, delv ....lb.	.15	.16	.15	.16	.15	.21
Arsenite, bgs, frt all'd lb.	...	.12	.12	.12½	.12	.13
Carbonate tech, bbls, NY lb.	.14	.16	.14	.16	.14	.15
Chloride fused, 600 lb drs, wks ....lb.	...	.04¼	.04¼	.046	.04¼	.046
Gran, 500 lb drs, wks lb.	...	.05	.05	.05¾	.05	.05¾
Soln 50%, tks, wks 100 lb.	...	2.25	...	2.25	...	2.25
Cyanide, 100 lb drs ....lb.	...	.33	...	.33	...	.33
Dust, 500 lb bbls, c-l, delv lb.	...	.09¼	.07½	.08½	.06½	.08½
Metal, high grade slabs, c-l, NY ....100 lb.	...	7.64	5.90	7.64	4.84	6.40
E. St. Louis ....100 lb.	...	7.25	4.60	7.25	4.60	6.00
Oxide, Amer, bgs, wks lb.	...	.06½	.06¼	.07½	.06¼	.07½
French 300 lb bbls, wks lb.	...	.08	.06¼	.07¾	.06½	.07¾
Palmitate, bbls ....lb.	.24½	.27½	.23	.27½	.23	.25
Resinate, fused, pale bbls lb.	...	.10	...	.10	...	.10
Stearate, 50 lb bbls ...lb.	...	.22	.21½	.24½	.20	.24½
Sulfate, crys, 400 lb. bbls wks ....lb.	...	.029	.0275	.029	...	.029
Flake, bbls ....lb.	...	.0325	...	.0325	...	.0325
Sulfide, 500 lb bbls, delv lb.	...	.07¾	.07¾	.08	.07¾	.08⅞
bgs, delv ....lb.	...	.07½	.07½	.07¼	.07½	.08⅝
Sulfocarbolate, 100 lb kgs lb.	.24	.29	.24	.26	.24	.26
Zirconium Oxide, crude, 70-75% grd, bbls, wks ton	75.00	100.00	75.00	100.00	75.00	100.00

Oils and Fats

	Current Market		1940 Low	1940 High	1939 Low	1939 High
Babassu, tks, futures ....lb.	nom.	.05⅞	.05¾	.06⅝	.05⅞	.07⅝
Castor, No. 3, 400 lb drs lb.	nom.	.09¾	.09¾	.12¾	.08¼	.12¾
Blown, 400 lb drs ...lb.	nom.	.11¾	.11¾	.14¾	.10¼	.14¾
China Wood, drs, spot NY lb.	...	.26¾	.22½	.28	.15	.28
Tks, spot NY ....lb.	...	.25¾	.21½	.27	.14½	.27
Coconut, edible, drs NY ..lb.	...	.07½	.07½	.09⅜	.08⅛	.10⅛
Manila, tks, NY ....lb.	...	.02⅞	.02¾	.03⅜	.02⅞	.04⅝
Tks, Pacific Coast ...lb.	.02⅝	.02¾	.02¾	.03½	.02⅝	.04⅜
Cod, Newfoundland, 50 gal bbls ....gal.	...	.60	.60	.72	.29	.72
Copra, bgs, NY ....lb.	.0185	.0190	.0165	.0190	.0160	.2625
Corn, crude, tks, mills ...lb.	.05¼	.05⅜	.05⅛	.06½	.05⅛	.07⅛
Refd, 375 lb bbls, NY ..lb.	...	.07¾	.07⅞	.09	.07½	.09¾
Degras, American, 50 gal bbls NY ....lb.	.08	.08½	.08	.10	.07	.10
Greases, Yellow ....lb.	nom.	.03⅞	.03	.05¼	.03⅞	.06¾
White, choice, bbls, NY lb.	nom.	.04¾	.03⅜	.05⅝	.04½	.07½
Lard, Oil, edible, prime..lb.	...	.08½	.08	.10	.09	.11¼
Extra, bbls ....lb.	...	.07½	.06¾	.09⅜	.08	.10⅜
Extra, No. 1, bbls ....lb.	...	.07¼	.06⅞	.08⅞	.07¾	.10⅛
Linseed, Raw less than 5 bbl lots ....lb.	...	.091	.09	.116	.092	.119
bbls, c-l, spot ....lb.	.083	.085	.084	.110	.084	.111
Tks ....lb.	.077	.079	.078	.104	.078	.104
Menhaden, tks, Baltimore gal.	no prices		.21	.35	21	.35
Refined, alkali, drs ....lb.	...	.073	.067	.079	.062	.082
Tks ....lb.	...	.067	.061	.071	.056	.076
Kettle boiled, drs .... lb.	...	.085	.079	.093	.074	.094
Light pressed, drs ....lb.	...	.067	.061	.075	.056	.076
Tks ....lb.	...	.061	.055	.069	.067	.069
Neatsfoot, CT, 20°, bbls, NY lb.	...	.15½	.15¼	.19¼	.14¾	.19¾
Extra, bbls, NY ....lb.	...	.07⅞	.06⅞	.09	.08	.10⅛
Pure, bbls, NY ....lb.	...	.08	.08	.14¼	.10¾	.16¾
Oiticica, bbls ....lb.	.18½	.19½	.17	.21	.09¼	.21
Oleo, No. 1, bbls, NY ...lb.	...	.07⅜	.07⅜	.07¾	.07¼	.12
No. 2, bbls, NY ....lb.	...	.07⅛	.07	.07½	.06¾	.11¾
Olive, denat, bbls, NY ..gal.	nom.	2.10	.94	2.10	.82	1.40
Edible, bbls, NY ....gal.	...	3.00	1.85	3.00	1.75	2.25
Foots, bbls, NY ....lb.	...	.10¼	.08	.10¼	.06¾	.10
Palm, Kernel, bulk ....lb.	no prices		no prices		.034	.036
Niger, cks ....lb.	nom.	.03¾	.03¼	.05½	.03⅝	.05½
Sumatra, tks ....lb.	...	.02⅛	.02⅛	.03	.0265	.02¾
Peanut, crude, bbls, NY lb.	...	.09	.06¾	.09	.06	.08
Tks, f.o.b. mill ....lb.	nom.	.05¼	.05⅛	.07⅛	.05¼	.07¼
Refined, bbls, NY ....lb.	...	.07⅜	.07⅜	.09¾	.08¾	.10¾
Perilla, drs, NY ....lb.	...	.18	.19	.21	.09½	.16½
Tks, Coast ....lb.	...	.17	.18½	.20	.089	.15¾
Pine, see Pine Oil, Chem. Sec.						
Rapeseed, blown, bbls, NY lb.	nom.	.17½	.17	.17½	.14	.17½
Denatured, drs, NY ..gal.	1.10	1.15	1.00	1.05	.80	1.05
Red, Distilled, bbls ....lb.	.06¼	.07¼	.06¼	.09½	.06¾	.09½
Tks ....lb.	...	.05¾	.05¾	.08	.064	.08½
Sardine, Pac Coast, tks ..gal.	.31	nom.	.31	.39	.24	.38
Refined alkali, drs .... lb.	...	.073	.067	.081	.062	.082
Tks .... lb	...	.067	.061	.075	.056	.076
Light pressed, drs .... lb	...	.067	.061	.075	.056	.076
Tks ....lb.	...	.061	.055	.069	.05	.07
Sesame, crude, tks ....lb.	...	.07¼	.07¼	.11¾	.09	.12
Soy Bean, crude						
Dom, tks, f.o.b. mills lb.	...	.04¾	.04¾	.06¼	.04½	.06½
Crude, drs, NY ....lb.	...	.05¾	.05¾	.07¾	.05⅛	.07⅝
Ref'd, drs, NY ....lb.	...	.07¼	.07¼	.08½	.06⅜	.09
Tks ....lb	...	.06¼	.06¼	.07⅝	.05¾	.07¾
Sperm, 38° CT, bleached bbls, NY ....lb.	...	.11	.105	.11	.09	.103
45° CT, blchd, bbls, NY...lb.	...	.103	.098	.103	.083	.096
Stearic Acid, double pressed dist bgs ....lb.	...	.10	.09¾	.13	.10	.13½
Double pressed saponified bgs ....lb.	...	.10¼	.10	.13¾	.10¼	.13¾
Triple pressed dist bgs lb.	...	.13	.12½	.16½	.12¾	.16½
Stearine, Oleo, bbls .... lb	nom.	.06¼	.05¼	.06½	.05½	.12
Tallow City, extra loose lb	nom.	.04¼	.03⅜	.05⅜	.04⅜	.07
Edible, tierces .... lb	nom.	.04¾	.04⅜	.05¾	.04½	.07¾
Acidless, tks, NY .... lb.	...	.06¼	.06¼	.08	.07	.09¼
Turkey Red, single, drs..lb	...	.07	.082	.09	.06	.08⅝
Double, bbls ....lb	...	.11	.11	.12¾	.08¾	.11¼
Whale:						
Winter bleach, bbls, NY lb.	...	095	..	.095	.075	.095
Refined, nat, bbls, NY..lb.	...	.091	...	.091	.071	.091

PROFESSIONAL DIRECTORY

BOOKLETS AND CATALOGS

Chemicals

A232. Calcium Chloride and Portland Cement; 48-page booklet tells what happens when calcium chloride is used in portland cement. Practical for plant operators and contractors, contains technical information for designing engineers and architects. In order to facilitate reference the booklet is divided into five sections as follows: (1) devoted to results produced by use of calcium chloride in cement, (2) devoted to practical application, (3) devoted to answering questions most frequently asked by engineers, builders and contractors, (4) devoted to abstracts from technical papers and reports, (5) devoted to specifications and recommendations on use of calcium chloride in cement. Solvay Sales Corp.

A233. Dutch Boy Painter, No. 4, 1940; Illustrated booklet contains article on the painting of acoustical materials. National Lead Co.

A234. Hydrogenated Coal-Tar Chemicals; 28-page spiral-bound book giving very complete physical and chemical data, interesting facts and uses of cyclohexane, methylcyclohexane, cyclohexanol, methylcyclohexanol, cyclohexanone, and methylcyclohexanone. Also describes testing methods. The Barrett Co.

A235. Plastics Bulletin, Vol. 2, 1940; Illustrated news of new developments in the plastics field. E. I. du Pont de Nemours & Co., Inc.

A236. Plexiglas; Information covering principal properties and more important applications of cast Plexiglas sheet and crystallite molding powder. Rohm & Haas Company.

A237. Polyvinyl Acetates; Technical bulletin gives information concerning different grades and uses of these thermoplastic resins. E. I. du Pont de Nemours & Co., Inc.

A238. Priorities, October, 1940; Leading article in this issue is one on characteristics of bromine from standpoint of general reader interest. Prior Chemical Corp.

A239. Resinews, Vol. IV, No. 13; Leaflet describing the properties and uses of "Aroplaz 945," a pure alkyd of the medium semi-oxidizing oil type. Stroock and Wittenberg Corp.

A240. Silicate P's & Q's, October, 1940; Describes series of studies made on suspending power of various solutions used in cleaning processes with Ilmenite Black. Philadelphia Quartz Co.

A241. Synthetic Organic Chemicals, October, 1940; Small folder describing the high dilution method for the synthesis of macrocyclic compounds. Written by G. F. Frame of the Eastman Kodak Research Laboratories. Eastman Kodak Co.

A242. The Neoprene Notebook, No. 27; Discusses use of neoprene in manufacture of braided hose along with several other interesting items about neoprene. E. I. du Pont de Nemours & Co., Inc.

A243. The Pioneer, October, 1940. 12-page booklet of various items of interest to the industry. Illustrates some of da Vinci's machines invented 450 years ago to solve water problems. Electro Bleaching Gas Co. and Niagara Alkali Co.

A244. The Tenderization of Meat; Up-to-date facts describing the scientific basis and working of the Tenderay Process. Industrial Fellowship on Meat Merchandising, Mellon Institute.

Equipment—Containers

E338. A-C Magnetic Control, GEA-3191; Illustrates, describes and gives specifications for controls for wound-rotor motors involved in material-handling machines. General Electric Co.

E339. Acid-Proof Brick and Tile; Describes and illustrates brick and tile for acid-resistant structures, also contains information on packing rings, packing tile for acid towers and tile for floor construction in industrial plants. Harbison-Walker Refractories Co.

E340. Aluminum Casting Alloys; 90-page spiral-bound booklet. Contents include choice of materials, aluminum ingot products, general foundry principles, design of aluminum alloy castings, and description of alloys. Aluminum Company of America.

E341. Aluminum News Letter, October, 1940; Descriptive information on the varied uses of aluminum. Aluminum Company of America.

E342. Distribution Transformers; Illustrated folder presenting details and engineering features of new distribution transformers. Allis-Chalmers Mfg. Co.

E343. Draft and Pressure Instruments, No. 801; Taking one feature after another this 12-page bulletin contains complete specifications covering the construction, principle of operation and application of these instruments. Republic Flow Meters Co.

E344. Electromet Products and Service; Contains descriptions and suggestions for uses of recently developed ferro-alloys and metals as well as of those already well known. This 24-page, pocket-size booklet has been designed primarily for reference use by foundrymen and steelmakers. Electro Metallurgical Co.

E345. Fluorophotometer; Detailed publication on the application of the Fluorophotometer in both fluorometric and colorimetric substances. The interest in these types of analysis in the pharmaceutical, dairy, food, cereal, baking and petroleum fields makes this a good reference manual. It describes in detail methods used and gives a bibliography of related data. Pfaltz & Bauer, Inc.

E346. High Temperature Bonding Mortars; 16-page booklet describes and gives characteristics of number of bonding mortar materials, also list a number of applications where certain mortars bring best results. Harbison-Walker Refractories Co.

E347. Klemp Catalog; Describes steel floor grating, stair treads, surface armor, etc. Well illustrated with photographs and diagrams showing installations and services of these products. William F. Klemp Co.

E348. Mixing Equipment. 24-page booklet discusses engineering considerations in mixer selection, illustrates and describes a number of mixers for various applications. Also describes and illustrates a line of pumps and precision temperature regulators. Eastern Engineering Co.

E349. Modern pH and Chlorine Control; A very complete and valuable publication for those interested in pH, chlorine and phosphate control and in water analysis. The book begins with the meaning and methods, has an extensive theoretical discussion, tables of approximate values for a number of substances such as acids, bases, foods, biological fluids, etc. Then explains applications in a number of industries and finally describes and illustrates equipment and apparatus employed. W. A. Taylor & Co., Inc.

E350. Modern Trends in Nickel Steel & Cast Iron Gear Materials; A thorough and well illustrated technical discussion of the above subject. International Nickel Company, Inc.

E351. Nickel Steel Topics, October, 1940; Illustrated items on the use of nickel alloys in a number of applications. International Nickel Co., Inc.

E352. Packaging, October, 1940; Illustrated articles and news of interest to anyone concerned with packaging. In this issue articles on "What Price Speed," "Gelatine and Dessert Packaging Equipment." Pneumatic Scale Corp.

E353. Packaging Review, No. 7; Folder illustrating range and variety of paper packages in the distribution of products. Union Paper & Bag Corp.

E354. Photoelectric Relays, GEA-1755C; Illustrated demonstrations of the applications of photoelectric relays to the improvement of many situations. General Electric Co.

E355. Process Industries Quarterly, Third Quarter, 1940; 12-page booklet of interesting information on problems encountered and solved by use of metals and alloys in the process industries. International Nickel Co., Inc.

E356. Reactrol System, GEA-3436; Gives eight illustrated ways to use this system of accurate temperature control. General Electric Co.

E357. Seamless Tubular Products, Tech. Bulletin 11-C; Contains specifications established for carbon steel and alloy steel tubes by the American Society for Testing Materials and The Association of American Railways. The specifications cover the manufacture, finish and workmanship, chemical and physical properties, tests, and permissible variations in weights and dimensions of tubes and pipe. The Babcock & Wilcox Tube Co.

E358. Synchronous Motors, GEA-3434; Folder illustrates and explains featured details in the construction of line of high-speed synchronous motors. General Electric Co.

E359. Time Switches; Descriptive folder, GEA-2963B, lists advantages and gives specifications for these timers for the automatic control of exhaust fans, pumps, blowers, mixing valves, filter cleaning, sign flashing, and other applications. General Electric Co.

E360. Welding Briefs, October, 1940; Contents include "Trends in Pressure Vessel Fabrication," also several other interesting items in the application of welding. Metal & Thermit Corp.

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IF YOU ARE A PRODUCER OF CHEMICAL SPECIALTIES OR OTHER MATERIALS USED IN VARIOUS INDUSTRIES AND WOULD BE INTERESTED IN OHIO REPRESENTATION, ADDRESS BOX 1414.

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ENGINEER, CHEMIST, 33, married. Ten years successful experience in foods, nutrition, biological, organic, oil, fuel, metallurgical and electro chemistry, imaginative, practical. BOX 1412 CHEMICAL INDUSTRIES.

YOUNG CHEMIST: Age 23 years, 2 years college training desires position as laboratory assistant—location immaterial; available immediately; excellent reference. BOX 1413, CHEMICAL INDUSTRIES.

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Graduate chemist, four years teaching experience in leading universities, eight years diversified production, research experience agricultural and industrial products; four years practical agronomy (fertilizers, insecticides, fungicides); thorough knowledge of sales development methods; wide acquaintanceship in the chemical and agricultural fields; desires connection in agricultural field work. Now employed, but seeks opportunity where training and experience can be utilized by progressive company. Box 1416, CHEMICAL INDUSTRIES.

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SALESMAN: To handle coal tar products sales for large independent by-product coke plant. Duties would also be to coordinate sales with manufacture. Must have chemical education. Reply to P. O. BOX 1293, PITTSBURGH, PA.

Formulas

Index to Advertisers

Index to Advertisers

"We"—Editorially Speaking

The sudden unexpected death of Russell Kent, our Washington editor, came as a terrible shock. We were at lunch with him at the National Press Club in Washington only an hour or so before he died of a heart attack. While he was suffering from a severe cold, he did not appear to be seriously ill.

In the year that Mr. Kent served the readers of this paper he developed a tremendous following. His Washington page was one of the features of CHEMICAL INDUSTRIES.

A veteran newspaper man of many years, he possessed a thorough knowledge of the innermost workings of Washington's political merry-go-round. Through his wide acquaintanceship, he was able to secure first-hand information that could be at all times thoroughly relied on for accuracy. In the last campaign we heard much about the "indispensable man." If there is such a person Russell Kent in his own sphere of activity was that man. It will be difficult to replace him. We extend to his family and his intimate friends our deepest sympathy in their hour of bereavement.

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Readers will naturally be interested to know if the Washington feature will be continued. The answer is very definitely yes, and announcement of the successor to Russell Kent will appear on this page in the December issue.

❖❖❖❖

Harley A. Nelson is assistant to the general manager, Technical Department, The New Jersey Zinc Company. He is the author of numerous publications on pigment and paint technology. The feature article which appears on pages 508-512 of this issue is an adaptation, prepared especially for CHEMICAL INDUSTRIES, by Edwin I. Oppel, of Mr. Nelson's recent monograph, "The Versatile Paint-Making Properties of Zinc Oxide," which is generally conceded to be the most comprehensive work of its kind which has been published.

Fifteen Years Ago

From Our Files of November, 1925

The New Jersey Chemical Society is organized in Newark, N. J.

A continuous expansion in the foreign trade in chemicals and allied products during the first nine months of 1925, is reported by C. C. Concannon, Chief of the Chemical Division, Department of Commerce.

Industrial chemicals are in heavy demand with prices generally firm.

Dr. Metzger is guest of honor at dinner in honor of past presidents of the Chemists' Club, New York.

Memorial meeting in honor of Professor Charles F. Chandler, Columbia University, held at Havermeyer Hall, Columbia University.

W. F. Barrett, president of Linde Air Products Co., and the Prestolite Co., is elected president, Carbide and Carbon Chemicals Corp.

Milton C. Whitaker, president, U. S. Industrial Chemical Co., is guest speaker at monthly meeting and Thanksgiving dinner of the Chemical Salesmen's Association.

❖❖❖❖

Ethyl Gasoline Corporation in its recent advertising in national media has gone the meat packing industry one better. For years we have heard about using every part of the pig but his squeal. Now Ethyl Gasoline reports to the Nation—"Now they even turn the smell of an oil well into gasoline!"

Continues the advertisement—"These astonishing chemists didn't stop there. They have another trick up their sleeves. They know how, if called upon, to make glycerine, resin, alcohol, ether, synthetic rubber, etc."

And it is only a few years ago that the president of one of our largest petroleum companies when asked to serve on a committee in the chemical industry insisted that his company was not a chemical company in any sense of the word!

❖❖❖❖

Certain "bottle-necks" in quantity production of a few essential war chemicals have occurred already and more are likely to happen as the defense program gains in momentum unless producers are given greater latitude in interpreting certain specifications. Only by violating strict confidences could the instances where such "bottle-necks" have occurred be disclosed and no useful purpose would be served now by specifically mentioning them.

It should be recognized, however, that a few hundred pounds of a given product can be produced under laboratory conditions in a much purer state than a manufacturer can hope to duplicate in large-scale plant operations. Specifications should not be based solely on an analysis of the laboratory yield. Due consideration should be given to what "tolerance" in the way of impurities can be allowed without impairing the value of the material in subsequent manufacturing operations.

❖❖❖❖

We have just discovered that what we need to speed up the defense program are more and better crooners. The very recent report on "Industrial Health in War"—prepared by the British Medical Research Council Industrial Health Board suggests:—"Take measures to alleviate boredom by varying the work and by providing distractions, *such as music*, that do not too greatly alienate the attention."

State of Chemical Trade
Current Statistics (Oct. 31, 1940)—p. 68

WEEKLY STATISTICS OF BUSINESS

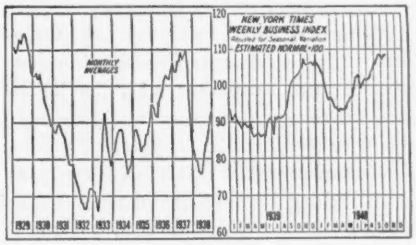
Week Ending	Carloadings 1940	Carloadings 1939	% of Change	Electrical Output* 1940	Electrical Output* 1939	% of Change	Jour. of Com. Price Index	Nat'l Chem. & Drugs	Fertilizer Fats & Oils	Ass'n Fert. Mat.	Price Indices Mixed Fert.	Price Indices All Groups	†Labor Dept. Chem. & Drug Price Index	% Steel Activity	N. Y. Times Index Bus. Act.	Fisher Commodity Index
Sept. 28	822,434	829,696	— 0.9	2,669,661	2,469,689	+ 8.1	79.5	97.8	44.0	70.3	78.6	75.3	76.7	92.5	108.6	82.1
Oct. 5	805,986	830,102	— 2.9	2,640,949	2,465,230	+ 7.1	79.8	97.6	43.4	71.8	78.6	75.5	76.8	92.6	107.3	82.4
Oct. 12	811,906	839,952	— 3.3	2,665,064	2,494,630	+ 6.8	80.7	97.6	43.5	71.7	78.6	75.9	76.8	94.2	108.0	82.8
Oct. 19	813,909	856,289	— 4.9	2,686,799	2,493,993	+ 7.7	81.2	97.6	44.0	71.8	78.6	76.2	76.9	94.9	108.1	83.4
Oct. 26	837,651	829,358	+ 1.0	2,711,282	2,538,779	+ 6.8	81.4	97.6	43.6	72.0	78.6	76.3	77.0	95.7	109.3	83.3

* K.W.H. 000 omitted. † 1926-1928 = 100.00.

MONTHLY STATISTICS

CHEMICAL:	Sept. 1940	Sept. 1939	Aug. 1940	Aug. 1939	July 1940	July 1939
Acid, sulfuric (expressed as 50° Baumé, short tons, Bureau of the Census)						
Total prod. by fert. mfrs.	......	153,897	194,664	161,791	180,553	139.248
Consumpt. in mfr. fert.	......	134,287	153.215	115.119	134,050	104.378
Stocks end of month	......	74,113	91,732	72,536	94,628	79,786
Alcohol, Industrial (Bureau Internal Revenue)						
Ethyl alcohol prod., proof gal.	21,559,233	18,104,177	24,094,279	18,539,035	22,457,040	17,643,960
Comp. denat. prod., wine gal	3,093,302	2,101,668	1,828,289	580,681	867,244	542.979
Removed, wine gal.	3,097,747	2,182,164	1,726,587	481,463	718,795	527,689
Stocks end of mo., wine gal.	738,171	685,736	747,274	767,662	647,139	670,230
Spec. denat. prod., wine gal.	10,600,276	10,523,022	9,681,922	8,610,026	9,575,329	6,893,795
Removed, wine gal.	11,058,758	10,665,895	9,468,110	8,717,897	8,777,859	6,859,407
Stocks end of mo., wine gal.	1,707,215	1,090,505	2,171,894	1,239,267	1,957,968	1,352,424
Ammonia sulfate prod., tons *a*	62,482.5	52,992	62,254	60,718	60,718	46,666
Benzol prod., gal. *b*	11,054,000	9,660,000	11,357,000	11,727,000	11,727,000	8,219,000
Byproduct coke prod., tons *a*	4,627,401	3,890,600	4,682,073	4,619,156	4,612,091	3,354,100
Cellulose Plastic Products (Bureau of the Census)						
Nitrocellulose sheets, prod., lbs.	736,372	861,073	610,141	759,235	680,067	697,609
Sheets, ship., lbs.	745,068	840,886	670,897	741,297	679,766	600,701
Rods, prod., lbs.	256,678	219,012	208,565	243,985	156,643	226,630
Rods, ship., lbs.	282,714	239,439	246,200	244,699	210,930	199,282
Tubes, prod., lbs.	100,236	84,253	71,455	65,426	62,413	54,495
Tubes, ship., lbs.	85,636	76,123	52,445	79,332	64,158	46,844
Cellulose acetate, sheets, rod, tubes						
Production, lbs.	826,248	705,640	772,928	1,041,430	564,729	561,018
Shipments, lbs.	754,786	676,669	783,686	814,634	407,830	536,674
Molding comp., ship.; lbs.	1,501,463	1,152,791	1,341,994	967,367	777,367	604,476
Methanol (Bureau of the Census)						
Production, crude, gals.	......	404,876	407,764	359,594	390,004	377,755
Production, synthetic, gals.	......	2,639,934	3,787,794	2,678,983	3,851,669	2,495,394
Pyroxylin-Coated Textiles (Bureau of the Census)						
Light goods, ship., linear yds.	......	......	......	2,819,719	2,413,798	2,259,299
Heavy goods, ship., linear yds.	......	......	......	2,323,008	2,016,516	1,712,002
Pyroxylin spreads, lbs. *c*	......	......	......	5,580,850	4,435,473	4,350,562
Exports (Bureau of Foreign & Dom. Commerce)						
Chemicals and related prod. *d*	......	......	$19,568	$15,000	$22,312	$13,459
Crude sulfur *d*	......	......	$1,436	$1,450	$833	$730
Coal-tar chemicals *d*	......	......	$2,462	$1,105	$2,587	$663
Industrial chemicals *d*	......	......	$4,574	$2,391	$5,067	$2,236
Imports						
Chemicals and related prod. *d*	......	......	$4,737	$11,224	$5,300	$11,500
Coal-tar chemicals *d*	......	......	$734	$1,037	$1,598	$1,191
Industrial chemicals *d*	......	......	$1,734	$967	$1,033	$1,068
Employment (U. S. Dept. of Labor, 3 year av., 1923-25 = 100) Adjusted to 1937 Census Totals						
Chemicals and allied prod., including petroleum	122.6	118.0	119.4	109.2	118.6	110.5
Other than petroleum	122.6	123.1	118.6	105.9	117.6	107.8
Chemicals	143.4	123.6	141.6	119.1	140.4	117.1
Explosives	147.8	99.9	139.9	93.3	132.7	91.1
Payrolls (U. S. Dept. of Labor, 3 year av., 1923-25 = 100) Adjusted to 1937 Census Totals						
Chemicals and allied prod., including petroleum	138.2	124.6	134.8	119.0	133.5	117.8
Other than petroleum	137.8	121.5	134.0	113.8	132.5	113.6
Chemicals	172.3	139.7	171.0	136.3	168.9	130.8
Explosives	175.4	114.4	172.1	109.1	166.8	102.8
Price index chemicals*	84.8	84.5	84.8	83.8	84.9	83.9
Drugs & Pharmaceuticals*	96.0	78.4	96.2	77.1	95.9	77.2
Fert. mat.*	68.1	67.2	68.0	65.5	67.3	65.3
Paint and paint mat.	84.1	84.7	84.2	82.1	84.6	82.2
FERTILIZER:						
Exports (long tons, Nat. Fert. Association)						
Fertilizer and fert. materials	......	......	......	141,171	122,837	154.800
Total phosphate rock	......	......	......	98,580	69,469	128,656
Total potash fertilizers	......	......	......	5,579	13,390	7,870
Imports (long tons, Nat. Fert. Association)						
Fertilizer and fert. materials	......	......	......	75,485	118,116	88,313
Sodium nitrate	......	......	......	9,481	82,342	18,479
Total potash fertilizer	......	......	......	29,087	7,441	41,234

INDUSTRIAL TRENDS



Business: Industrial activity has improved further in recent weeks. Schedules are still expanding and some industries report record or near-record operations. The volume of new business outstripped production in some instances, and backlogs of unfilled orders increased. The Federal Reserve Board's Index of industrial production was placed at 125 in September and 127 in October. Because of continued improvement and a rather large seasonal adjustment to be made, it is likely that the index will reach 128 for November and possibly 135 by the end of the year.

Steel: Production of steel ingots during October established a new high record of 6,461,898 net tons, or more than 5% greater than the previous peak of 6,147,783 net tons produced in November, 1939. Consumers continue to arrange for purchases of steel in volume, and according to Pittsburgh authorities most consumers' inventory positions are not in excess of three months' requirements.

Steel exports amounted to about 20% of ingot producing capacity in August, with nearly three-quarters of these shipments going to the United Kingdom and Canada.

Pig iron and coke supplies are becoming depleted. A large number of bee-hive ovens have already been put in operation and others are being made ready.

Electric Output: Production of electricity in the United States for the week ending October 26 set a new all-time record. Production was 2,711,-282,000 kwh. against 2,538,779,000 kwh. for the like 1939 week, or an increase of 6.8%. The average advantage over last year through the month of October was about 7.1% while during September it was about 7.7%.

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Carloadings: A new peak for the year in revenue freight loadings was reached in the week ending October 26. A contraseasonal gain placed the loadings at 837,651 against the preceding week's total of 813,909.

Although loadings will probably not continue such large contraseasonal gains, railroad officials expect that traffic will continue at fairly high levels for some time to come.

Automotive: Automobile production was at a peak in October, registering a 52% gain over the best previous October. The rapid rate of production continued into November with the industry currently operating at best daily level in the last eleven years.

Domestic retail sales of new cars and trucks in October are at about 390,000 units. This a gain of about 42% over the like 1939 period and more than 100% over September, 1940.

Textiles: The textile industry has made some gains. Since last August many orders have been placed and mill activity has been stepped up. The cotton industry has large backlogs and from present indications should finish out the year in a strong position. Greater activity also is prevailing in the woolen industry with most mills now booked to capacity over the next three or four months. Rayon industry continues to expand though at a slower rate.

Commodity Prices: Prices of some industrial materials, particularly lumber, steel scrap, non-ferrous metals, hides, and wool, continued to advance from middle of September to middle of October. There were also increases in some manufactured products, notably cotton and woolen products. A few grain prices were higher while most foodstuffs were unchanged.

Retail Trade: Sales for month of October were about 2% above October, 1939. Department stores are beginning to buy more freely to build up their inventories. Due to general business improvement the consumer is in a better position to purchase goods and retail sales will undoubtedly increase as this position becomes stronger.

Outlook: Most manufacturers have continued to sell more than they are shipping and orders are still coming in to create backlogs. It, therefore, seems that production in all industries should be favorably affected. The heavy manufacturing industries are particularly active. Consumer purchasing power has been stimulated and will act to increase and prolong the cycle of advancing production and consumption.

MONTHLY STATISTICS (cont'd)

FERTILIZER: (Cont'd)	Sept. 1940	Sept. 1939	Aug. 1940	Aug. 1939	July 1940	July 1939
Superphosphate e (Nat. Fert. Association)						
Production, total	278,103	273,378	303,393	231,128	271,877	206.783
Shipments, total	371,539	351,057	186,298	155,780	158,944	98,565
Northern area	292,234	281,374	118,613	104,123	101,421	68.462
Southern area	79,305	69,683	67,685	51,657	57,523	30.103
Stocks, end of month, total	1,275,841	1,151,976	1,348,226	1,197,822	1,202,304	1,080.976
Tag Sales (short tons, Nat. Fert. Association)						
Total, 17 states	282,844	222,040	161,633	154,853	40,300	51.630
Total, 12 southern	142,636	154,413	60,782	42,992	32,829	47.915
Total, 5 midwest	100,208	67,627	100,851	111,861	7,471	3.715
Fertilizer employment *i*	......	99.5	81.4	73.9	79.8	73.4
Fertilizer payrolls *i*	......	87.6	71.2	62.7	69.7	63.4
Value imports, fert. and mat. *d*	......	......	......	$1,711	$2,439	$2,240
GENERAL:						
Acceptances outst'd'g *f*	......	$215	$181	$235	$188	$236
Coal prod., anthracite, tons	4,053,000	4,840,000	3,775,000	3,832,000	4.415.000	2,951,000
Coal prod., bituminous, tons	38,413,000	38,465,000	39,240,000	34,688,000	36,080,000	29,391,000
Com. paper outst'd'g *f*	$250	$209	$244	$201	$232	$194
Failures, Dun & Bradstreet	976	1,043	1,128	1,126	1.175	1,153
Factory payrolls *i*	109.4	93.8	103.8	89.7	96.5	84.4
Factory employment *i*	107.2	100.2	103.6	96.3	99.5	93.5
Merchandise imports *d*	......	$181,461	$220,217	$175,623	$232,258	$168,910
Merchandise exports *d*	......	$288,573	$349,800	$250,102	$317,015	$229,631
GENERAL MANUFACTURING:						
Automotive production	269,108	188,757	75,878	99,868	231,703	209,359
Boot and shoe prod., pairs	......	......	......	43,580,655	33,467,857	34,211,989
Bldg. contracts, Dodge *j*	$347,651	$323,227	$414,941	$312,328	$398,673	$299,883
Newsprint prod., U. S. tons	77,888	77,309	86,633	80,000	82,579	74,932
Newsprint prod., Canada, tons.	282,322	253,230	316,607	236,975	332,689	227,630
Glass containers, gross‡	4,289	4,250	4,653	4,802	4,780	3,506
Plate glass prod., sq. ft.	14,090,796	13,662,855	......	10,450,000	8,521,800	6,212,200
Window glass prod., boxes	1,001,979	913,980	992,906	867,452	993,678	690,418
Steel ingot prod., tons	5,895,232	4,769,468	6,033,037	4,241,994	5,595,070	3,564,827
% steel capacity	90.75	72.87	89.72	62.62	83.40	52.74
Pig iron prod., tons	4,176,527	2,878,556	4,238,041	4,053,945	4,053,945	2,639,022
U.S. cons'pt. crude rub., lg. tons	......	50,150	50,477	51,740	47,011	43,880
Tire shipments	4,511,664	5,658,126	4,173,508	4,990,486	4,348,281	5,142,832
Tire production	4,416,587	5,076,280	4,621,223	5,510,819	4,853,869	4,595,362
Tire inventories	9,886,022	8,080,462	9,732,108	8,690,984	9,344,956	8,103,365
Cotton consumpt., bales	639,252	624,183	654,503	628,448	597,850	521,353
Cotton spindles oper.	......	22,231,976	22,078,162	22,009,882	21,916,700	21,939,404
Silk deliveries, bales	28,828	36,869	30,189	33,095	22,766	26,134
Wool consumption *s*	......	......	......	38.9	31.2	30.1
Rayon deliv., lbs.	30.900,000	32,800,000	35,400,000	31,300,000	32,700,000	32,900,000
Hosiery (all kinds) *t*	......	......	......	9,739,075	9,418,000	7,748,929
Rayon employment *i*	311.9	300.2	307.7	255.1	306.9	297.0
Rayon payrolls *i*	324.4	286.4	318.0	246.6	314.7	283.2
Soap employment *i*	82.4	88.5	83.6	86.0	81.3	81.9
Soap payrolls *i*	107.1	107.1	101.8	102.3	99.9	99.0
Paper and pulp employment *i*	116.5	108.8	116.9	107.0	117.0	105.8
Paper and pulp payrolls *i*	123.7	113.4	124.8	107.7	126.4	101.2
Leather employment *i*	79.8	86.5	80.3	85.3	80.1	85.5
Leather payrolls *i*	76.8	84.2	77.0	83.1	76.0	82.0
Glass employment *i*	109.1	100.9	106.9	98.5	104.2	96.3
Glass payrolls *i*	119.7	105.0	116.0	102.5	106.2	91.5
Rubber prod. employment *i*	89.7	86.0	85.8	82.6	83.5	78.7
Rubber prod. payrolls *i*	96.0	91.0	87.8	86.3	85.2	81.5
Dyeing and fin. employment *i*	124.9	125.0	121.5	122.2	116.1	119.2
Dyeing and fin. payrolls *i*	106.5	107.7	101.8	103.3	95.0	97.6
MISCELLANEOUS:						
Oils & Fats Index (26=100)[1]	49.3	67.0	48.6	48.1	53.4	50.8
Gasoline prod. *p*	......	51,890	52,658	46,899	51,879	51,896
Cottonseed oil consumpt., bbls.	......	......	......	305,000	258,730	244,827
PAINT, VARNISH, LACQUER, FILLERS:						
Sales 680 establishments	......	......	......	$34,448,530	$35,553,580	$30,758,617
Trade sales (580 establishments)	......	......	......	$19,046,555	$19,573,840	$17,215,946
Industrial sales, total	......	......	......	$12,153,308	$12,732,233	$10,713,443
Paint & Varnish, employ. *i*	126.2	122.1	123.5	122.1	124.7	122.2
Paint & Varnish, payrolls *i*	134.5	127.5	132.1	125.6	132.7	124.0

a Bureau of Mines; *b* Crude and refined plus motor benzol, Bureau of Mines; *c* Based on 1 lb. of gun cotton to 7 lbs. of solvent, making an 8-lb. jelly; *d* 000 omitted, Bureau of Foreign & Domestic Commerce; *e* Expressed in equivalent tons of 16% A.P.A.; *f* 000,000 omitted at end of month; *i* U. S. Dept. of Labor, 3 year average, 1923-25 = 100, adjusted to 1937 census totals; *j* 000 omitted, 37 states; *p* Thousands of barrels, 42 gallons each; *q* 680 establishments, Bureau of the Census; *r* Classified sales, 580 establishments, Bureau of the Census; *s* 53 manufacturers, Bureau of the Census; *t* 387 identical manufacturers, Bureau of the Census, quantity expressed in dozen pairs; *v* In thousands of bbls., Bureau of the Census; ** Indices, Survey of Current Business, U. S. Dept. of Commerce; *z* Units are millions of lbs.; ‡ 000 omitted; * New series beginning March, 1940; [1] Revised series beginning February, 1940.

American Cyanamid Earns $1.61 a Share

Report of American Cyanamid Co. and subsidiaries for nine months ended September 30, 1940, subject to audit and year-end adjustments, shows net profit of $4,403,403 after depreciation, depletion, research and process development expenses, interest, amortization, federal income taxes, etc., equal after preferred dividend requirements, to $1.61 a share on 2,618,364 shares (par $10) of Class A and Class B common stocks. This compares with $3,339,437 or $1.25 a share on combined 2,618,369 common stocks in first nine months of 1939.

Earnings Statements Summarized

Company:	Annual dividends	Net income 1940	Net income 1939	Common share earnings 1940	Common share earnings 1939	Surplus after dividends 1940	Surplus after dividends 1939
Air Reduction Co., Inc.:							
Sept. 30 quarter	y 1.75	1,695,373	1,291,816	h.62	h.50	......	......
Nine months, Sept. 30	y 1.75	4,801,469	3,524,411	h1.76	h1.37	......	......
American Cyanamid Co.:							
Sept. 30 quarter	.60	1,379,275	1,189,723	.50	.44	......	......
Nine months, Sept. 30	.60	4,403,403	3,339,437	1.61	1.25	......	......
Atlas Powder Co.:							
††Sept. 30 quarter	y 3.75	382,743	381,929	h1.19	h1.19	......	......
Nine months, Sept. 30	y 3.75	1,127,261	831,842	h3.48	h2.31	......	......
Commercial Solvents Corp.:							
Sept. 30 quarter	f ...	562,437	473,520	.21	.18	......	......
Nine months, Sept. 30	f ...	1,608,988	911,620	.61	.34	......	......
Dow Chemical Co.:							
Aug. 31 quarter	y 3.00	2,105,946	1,449,524	1.96	1.33	......	......
du Pont de Nemours & Co., E. I.:							
Sept. 30 quarter	y 8.50	21,074,802	22,926,709	j1.74	j1.91	d143,283	6,910,910
Nine months, Sept. 30	y 8.50	67,928,497	62,798,244	j5.80	j5.19	4,232,368	14,727,871
Freeport Sulphur Co.:							
Sept. 30 quarter	y 2.00	816,626	383,216	1.02	.48	......	......
Nine months, Sept. 30	y 2.00	2,314,436	1,038,211	2.90	1.30	......	......
Hercules Powder:							
Nine months, Sept. 30	y 3.45	3,744,236	3,646,561	2.54	2.47	......	......
Interchemical Corp.:							
Nine months, Sept. 30	y 1.60	782,097	1,022,020	1.68	2.51	140,461	612,089
Twelve months, Sept. 30	y 1.60	1,342,038	1,234,505	3.27	2.91	......	......
Monsanto Chemical Co.:							
Sept. 30 quarter	y 3.00	¶¶469,031	¶¶1,192,219	.28	.85	......	......
Nine months, Sept. 30	y 3.00	¶¶3,576,757	¶¶3,253,284	2.58	2.31	......	......
New Jersey Zinc Co.:							
Sept. 30 quarter	y 3.00	1,796,195	1,460,290	.91	.74	......	......
Nine months, Sept. 30	y 3.00	5,114,464	3,507,939	2.60	1.78	......	......
Newport Industries, Inc.:							
Sept. 30 quarter	f ...	20,440	83,626	h.03	h.13	......	......
Nine months, Sept. 30	f ...	271,236	265,812	h.44	h.43	......	......
Twelve months, Sept. 30	f ...	414,735	272,348	h.67	h.44	......	......
Procter & Gamble Co.:							
Sept. 30 quarter	y 2.75	4,589,992	6,951,841	.69	1.06	......	......
Sherwin-Williams Co.:							
Year, Aug. 31	y 3.00	4,828,746	4,463,992	6.57	5.96	......	......
Texas Gulf Sulphur Co.:							
Sept. 30 quarter	y 2.25	2,757,763	1,749,469	.72	.45	837,763	d170,531
Nine months, Sept. 30	y 2.25	7,258,736	5,014,295	1.89	1.30	538,736	d745,705
Twelve months, Sept. 30	y 2.25	10,091,922	6,704,150	2.63	1.74	......	......
U. S. Industrial Alcohol Co.:							
Six months, Sept. 30	f ...	390,651	*.....	.99	...	......	......
Union Carbide Corp.:							
Sept. 30 quarter	y 2.30	11,004,553	8,400,326	h1.19	h.92	......	......
‡‡Nine months, Sept. 30	y 2.30	30,976,728	19,151,730	h3.34	h2.10	......	......
Victor Chemical Works:							
Sept. 30 quarter	y 1.60	362,563	298,801	.52	.43	......	......
Nine months, Sept. 30	y 1.60	848,408	735,784	1.22	1.06	......	......
Westvaco Chlorine Products Corp.:							
Sept. 30 quarter	§ 1.40	242,728	343,517	h.50	h.80	......	.....
‡‡Nine months, Sept. 30	§ 1.40	971,290	864,229	h2.19	h1.91	......	......

a On Class A shares; *b* On Class B shares; *c* On Combined Class A and Class B shares; *d* Deficit. *f* No common dividend; *j* On average number of shares; *k* For the year 1940; *p* On preferred stock; On Class A shares; *y* Amount paid or payable in 12 months to and including the payable date of the most recent dividend announcement; ‡ Indicated quarterly earnings as shown by comparison of company's reports for the 6 and 9 months periods; § Plus extras; *n* Preliminary statement; *h* On shares outstanding at close of respective periods. ** Indicated quarterly earnings as shown by comparison of company's reports for 1st quarter of fiscal year and the six months period. ‡‡ Indicated earnings as compiled from quarterly reports. † Net loss. * Not available. ¶¶ Before interest on income notes.

Price Trend of Representative Chemical Company Stocks

	Sept. 28	Oct. 5	Oct.* 11	Oct. 19	Oct. 26	Net gain or loss last mo.	Price on Oct. 28, 1939	1940 High	1940 Low
Air Reduction Co.	40¾	42	40⅝	41¼	41¾	+1	61	58⅛	36½
Allied Chemical & Dye	163	165	163¾	171	171	+8	182	182	135½
Amer. Agric. Chem.	16¼	15⅞	15⅝	15⅝	15¾	—½	21½	21	12⅛
Amer. Cyanamid "B"	36	35¾	35⅛	36⅛	34⅝	—1⅜	33¾	39⅞	26
Columbian Carbon	83	83	81	82	79⅞	—⅛	94¾	98¾	71
Commercial Solvents	9⅞	10	10	9⅞	9⅞	....	13⅝	16⅝	8
Dow Chemical Co.	136	139	144½	141	143¾	+7¾	139½	171	133
du Pont de Nemours	173	177½	171½	171½	171	—2	183	189¼	146½
Hercules Powder	83	82½	77¾	76¼	75½	—7½	89	100½	74
Mathieson Allkali	28½	29½	29	30	30	+1½	32¾	32¾	21
Monsanto Chem Co.	91½	93¾	92	90¼	89½	—2	110	119	86
Standard Oil of N. J.	33¾	33½	32¼	31⅞	34	+¼	47⅝	46½	29⅞
Texas Gulf Sulphur	33½	33⅝	32½	33¾	34¼	+¾	36⅜	35¾	26⅞
Union Carbide & Carbon	74¼	75⅛	74	73¾	75	+¾	90	88⅜	59⅞
U. S. Industrial Alcohol	22⅞	22	23	23¾	22⅝	—¼	26½	28	14

* Stock Exchange closed on Oct. 12, Columbus Day.

Dividends and Dates

Name	Div.	Stock Record	Payable
Allied Labs., q.	15c	Dec. 16	Dec. 30
Archer-Daniels-Midland	35c	Nov. 20	Dec. 1
Atlas Powder Co., pf., q.	$1.25	Oct. 18	Nov. 1
Barnsdall Oil Co.	15c	Nov. 7	Dec. 9
Eagle Picher Lead	20c	Dec. 2	Dec. 16
Fansteel Metallurgical Corp., pf., q.	$1.25	Dec. 14	Dec. 18
Freeport Sulphur Co., q.	25c	Nov. 15	Dec. 2
extra	50c	Nov. 15	Dec. 2
Metal & Thermit Corp., pf., q.	$1.75	Dec. 13	Dec. 23
National Gypsum Co., pf., q.	$1.125	Nov. 14	Dec. 1
National Lead Co., pf., B q.	$1.50	Oct. 18	Nov. 1
New Jersey Zinc Co.	$1.00	Nov. 20	Dec. 10
Procter & Gamble Co., q.	50c	Oct. 25	Nov. 15
Sharp & Dohme, Inc., pf., q.	.875	Oct. 18	Nov. 1
Sherwin-Williams Co.,	75c	Oct. 31	Nov. 15
pf., q.	$1.25	Nov. 15	Dec. 2
Squibb (E.R.) & Sons, $5 pf., Ser. A, q.	$1.25	Oct. 15	Nov. 1
United Chemical Co., Inc., pf.	75c	Nov. 12	Dec. 2
Vick Chemical Co., q.	50c	Nov. 15	Dec. 2

For quarter ended September 30, 1940, indicated net profit (based on a comparison of company's reports for the six and nine months periods) was $1,379,275, equal to 50 cents a share on combined Class A and Class B common shares, comparing with $1,189,723 or 44 cents a share on common in September quarter of previous year and $1,348,526 or 49 cents a common share for quarter ended June 30.

Commercial Solvents Earnings Up

Commercial Solvents Corp. reports for nine months ended September 30, 1940, consolidated net profit of $1,608,988 after charges and federal income taxes at new rates, equal to 61 cents a share on 2,636,878 shares of capital stock.

This compares with $911,620 or 34 cents a share, in first nine months of 1939.

For quarter ended September 30, last, net profit was $562,437 after adjustment for increased federal income taxes, equal to 21 cents a share, comparing with $473,520, or 18 cents a share, in September quarter of previous year.

Monsanto Earnings Increase

Monsanto Chemical Co. and American subsidiaries report for quarter ended September 30, 1940, profit of $469,031 after depreciation, federal taxes, including increased tax assessments under the recently enacted Second Revenue Act, etc., but before minority interest, comparing with $1,192,219 in September quarter of 1939.

After deducting minority interest of $14,162 and $112,500 dividends paid on $4.50 preferred stock of parent company, the profit for September quarter equals 28 cents a share on 1,241,694 shares of common stock.

Chemical Finances
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Chemical Stocks and Bonds

PRICE RANGE Oct. 1940 Last	High	Low	1939 High	Low	1938 High	Low	Sales Oct. 1940 (Number of shares)	Sales 1940	Stocks	Par $	Shares Listed	Dividends	Earnings** $-per-share-$ 1939	1938	1937
NEW YORK STOCK EXCHANGE															
54	70¼	50	71½	53	61	46¼	3,900	37,100	Abbott Labs.	No	752,468	$2.05	2.61	2.43	2.51
42¾	58⅛	36½	68	45¼	67⅞	40	34,500	282,100	Air Reduction	No	2,563,992	1.50	1.98	1.47	2.86
171	182	135⅛	200½	151½	197	124	10,100	113,500	Allied Chem & Dye	No	2,214,099	9.00	9.50	5.92	11.19
15¼	21	12⅛	24½	16	28½	22	1,900	34,900	Amer. Agric. Chem	No	627,987	1.30	1.22	2.23	2.95
5¼	8¼	4⅛	11⅞	5⅛	15	9	800	51,000	Amer. Com. Alcohol	No	280,934	....	—.40	—2.05	3.23
32½	35½	23	37	21	31½	20	2,400	19,800	Archer-Dan.-Midland	No	545,416	1.10	3.02	.43	5.03
64½	80½	57	71	50	68	36	1,300	17,300	Atlas Powder Co.	No	250,288	3.00	3.82	2.69	4.40
120	124¾	112½	127	116	126¼	105	190	4,960	5% conv. cum. pfd.	100	68,597	5.00	18.94	14.77	20.90
28⅛	35½	20	30¼	13⅝	26⅝	9	25,400	642,200	Celanese Corp. Amer.	No	1,000,000	.50	3.53	.20	2.04
118¾	119¾	105½	109⅞	84	96	82	950	26,870	prior pfd	100	164,818	7.00	37.72	15.05	27.07
11⅜	20	10⅛	18	11½	17	7⅛	8,900	299,700	Colgate-Palm.-Peet	No	1,962,087	1.00	2.74	1.77	—.35
80	98¾	71	96	73	98½	53¾	2,300	25,500	Columbian Carbon	No	537,406	4.50	5.23	5.13	8.31
10⅛	16⅝	8	16	8⅝	12¼	5⅞	21,700	774,200	Commercial Solvents	No	2,636,878	....	.61	—.11	.60
45½	65⅛	43	67½	54⅞	70¾	53	18,200	156,700	Corn Products	25	2,530,000	3.00	3.32	3.18	2.52
175¼	179	165	177	150	177	162	400	5,700	7% cum. pfd.	100	245,738	7.00	41.18	39.69	32.96
15¼	23¼	12½	32⅝	18	40⅞	25	910	23,860	Devoe & Rayn. A.	No	95,000	....	2.05	—1.72	4.05
138⅜	171	133	144⅝	101½	141	87⅞	21,200	108,600	Dow Chemical	No	1,034,988	3.00	3.76	3.91	4.15
171	189¼	146½	188½	126¼	154¾	90½	25,200	338,400	DuPont de Nemours	20	11,065,762	7.00	7.70	3.74	7.37
125⅛	126⅛	114	124⅛	112	120½	109½	5,600	48,050	4½% pfd.	No	1,688,850	4.50	52.25	87.27	165.48
137½	166¾	117	186⅛	138⅛	187	121½	7,300	142,500	Eastman Kodak	No	2,476,013	6.00	8.55	7.54	9.76
175½	178	155	183½	155½	173	157	60	1,610	6% cum.	100	61,657	6.00	349.31	261.22	362.45
35	38¾	24¾	36	18¼	32	19⅞	9,300	169,900	Freeport Sulphur	10	796,380	1.50	2.76	1.87	3.36
7	10	5½	10⅞	7	12⅛	6¾	2,700	38,800	Gen. Printing Ink	1	735,960	.80	.94	.62	1.32
14½	19¾	11	24⅛	14	28½	13	5,400	89,700	Glidden Co.	No	829,989	.50	1.70	—.29	2.62
38	44⅝	30	47	34	51½	37	500	7,300	4½% cum. pfd.	50	199,940	2.25	4.27	1.03	12.72
100	113¼	89⅞	112¼	93	111	76¾	1,200	16,100	Hazel Atlas	25	434,409	5.00	6.64	4.97	6.67
76½	100½	74	101½	63	87	42¾	4,600	80,900	Hercules Powder	No	1,316,710	2.85	3.65	1.95	2.97
128¾	133½	126¼	135½	128½	135¼	126¾	200	4,680	6% cum. pfd.	100	96,194	6.00	60.87	35.31	50.75
26	29	16⅝	29½	16¾	30⅝	14⅝	5,300	71,300	Industrial Rayon	No	759,325	.75	1.77	.24	.34
27	47⅜	21¼	46¼	17½	34½	15	3,500	56,900	Interchem.	No	290,320	.40	4.10	.32	1.44
110	113	91	109½	90	98	80	360	5,290	6% pfd.	100	65,661	6.00	24.27	7.39	12.28
2	2⅜	1	3⅝	1½	3⅞	2	3,400	50,700	Intern. Agricul.	No	436,048	....	—1.32	—0.003	.16
28	38	18⅛	41	16	29	15	900	15,100	7% cum. pfd.	100	100,000	....	1.26	7.01	7.70
26⅞	38⅞	19⅜	55¾	35	57⅝	36⅞	54,400	792,500	Intern. Nickel	No	14,584,025	2.00	2.39	2.09	3.31
37¼	37½	26⅞	38	29	30¼	19½	1,000	12,700	Intern. Salt	No	240,000	1.75	1.92	2.29	2.11
20	23¾	14⅜	22½	14½	24	19¼	1,000	14,800	Kellogg (Spencer)	No	509,213	1.10	1.39	.71	2.81
44½	53⅜	30	56¾	36½	58⅝	23¼	14,000	167,300	Libbey Owens Ford	No	2,513,258	2.75	3.21	1.57	4.19
15¾	18⅜	10⅛	19	13½	21½	12⅛	3,100	80,600	Liquid Carbonic	No	700,000	1.00	1.62	1.81	2.37
30⅞	32¾	21	37⅝	20¾	36⅞	19¾	4,900	91,200	Mathieson Alkali	No	828,171	1.50	1.12	1.01	1.81
86	119	86	114¾	85¾	110	67	9,100	123,500	Monsanto Chem.	No	1,241,816	3.00	4.01	2.35	4.40
117	119	110	121	110	117½	111	80	2,870	4½% pfd. A.	No	50,000	4.50	54.29	31.51	49.99
120	122	113½	122½	112	...	...	430	2,760	4½% pfd. B.	No	50,000	4.50	54.29	31.51	49.99
18½	22½	14⅛	27⅛	17⅞	31	17⅛	19,400	233,200	National Lead	10	3,095,100	.87	1.28	.75	.95
167½	173⅜	160	173⅛	152	178½	154	500	4,300	7% cum. "A" pfd.	100	213,793	7.00	27.04	20.03	22.86
145	148½	132	145	132	145½	127	460	3,320	6% cum. "B" pfd.	100	103,277	6.00	55.30	35.97	43.77
8	14¼	6⅛	17¾	8½	19½	9⅞	12,100	180,000	Newport Industries	1	620,459	....	.66	—.08	2.22
52	64⅝	42	70	50	76¼	40	8,200	124,900	Owens-Illinois Glass	12.50	2,661,204	2.00	3.17	2.02	3.51
55⅞	71¾	53	66	50⅝	59	39½	20,300	183,900	Procter & Gamble	No	6,325,087	2.25	3.80	2.59	4.09
116	118½	112½	119¾	112	122¼	114	280	7,570	5% pfd.	100	169,517	5.00	298.55	101.81	157.05
10	13⅛	7⅝	17¼	9⅞	18⅝	10	17,100	167,900	Shell Union Oil	No	13,070,625	.50	.77	.70	1.44
103¼	108¼	95⅛	107⅞	98½	106½	93	800	14,300	5½ cum. pfd.	100	341,000	5.50	34.61	33.18	60.59
20¼	23¼	12¼	29½	15½	34¾	18½	6,500	66,300	Skelly Oil	No	995,349	.75	1.99	2.27	6.07
26¼	29	20¾	30	22¾	35½	24¾	34,000	476,100	S. O. Indiana	25	15,272,020	1.25	2.24	1.82	3.16
36⅜	46½	29⅞	53½	38	58⅝	39¾	92,300	942,500	S. O. New Jersey	25	26,618,065	1.25	3.27	2.86	5.64
7	7¼	4¼	9⅛	4	8	3⅞	5,100	97,400	Tenn. Corp.	5	853,696	....	.41	.46	1.09
36⅝	47⅝	33	50¾	32½	49⅝	37⅝	59,600	629,800	Texas Corp.	25	10,876,882	2.00	3.02	2.13	5.02
34¾	35¾	26⅞	38½	26	38	26	11,700	160,900	Texas Gulf Sulphur	No	3,840,000	2.00	2.04	1.81	3.03
73⅞	88⅜	59⅞	94¼	65½	90⅞	57	33,600	409,000	Union Carbide & Carbon	No	9,277,288	1.90	3.86	2.77	4.81
53½	65⅝	42½	69½	52	73½	39	1,300	39,200	United Carbon	No	397,885	3.00	3.81	3.73	5.91
23¼	28	14	29⅝	13½	30¼	13½	8,300	109,100	U. S. Indus. Alcohol	No	391,238	....	.20	—1.08	1.24
36¼	43⅞	25	40	16	28⅞	11½	34,500	506,800	Vanadium Corp. Amer.	No	377,140	1.00	3.25	.61	2.22
28½	31⅛	19	29¾	18¼	25¼	13½	1,200	31,800	Victor Chem.	5	696,000	1.40	1.59	1.05	1.01
2¼	4⅛	1¾	5¾	2½	5⅝	2¾	4,000	54,500	Virginia-Caro. Chem.	No	486,122	....	—1.57	—1.80	—.05
22⅞	31⅜	14	33⅝	17	32⅛	15¾	3,000	46,100	6% cum. part. pfd.	100	213,052	....	2.41	1.90	5.88
36½	38½	27¾	39¼	15¼	20⅛	10	2,000	43,300	Westvaco Chlorine	No	339,362	1.85	2.81	1.52	1.46
33⅜	39¼	28⅞	39½	29	31½	20	21,000	52,200	cum. pfd.	30	192,000	1.50	6.64	4.19	4.09
NEW YORK STOCK EXCHANGE															
36	39⅞	26	35¾	18⅝	30¼	15½	28,800	475,400	Amer. Cyanamid "B"	10	2,618,387	.60	2.07	.91	2.09
123½	127	98	112¾	76	92	50	825	21,550	Celanese, 7% cum. 1st pfd.	100	148,179	7.19	34.17	8.95	22.32
4⅜	5⅞	2⅝	6¾	3	6¾	3	1,300	12,800	Celluloid Corp.	15	194,952	....	—.70	—2.73	—.92
3	7¾	2¾	7⅝	4½	12	6½	......	1,100	Courtauld's Ltd.	£1	24,000,000	.13	4.92%	.20%	5.64%
7¾	8⅛	5	9¼	5	9⅞	6	1,700	16,900	Duval Texas Sulphur	No	500,000	....	1.25	.71	.43
71	92	60	68	30	41¼	27	200	16,150	Heyden Chem. Corp.	100	125,497	2.00	5.98	2.07	3.94
92½	104	65	117	90	115½	55	4,900	53,500	Pittsburgh Plate Glass	25	2,192,824	4.00	4.94	3.00	3.53
84	100	62½	113¼	81	117⅞	66	3,700	41,350	Sherwin Williams	25	638,927	2.75	5.96	2.43	3.78
112⅞	114⅞	106	116	106½	114⅛	107	370	2,880	5% cum. pfd.	50	132,189	5.00	35.08	3.76	45.50
PHILADELPHIA STOCK EXCHANGE															
185½	189½	158¾	179	135	167	121½	275	3,160	Pennsylvania Salt	50	150,000	6.00	10.52	6.29	11.79

PRICE RANGE Oct. 1940 Last	High	Low	1939 High	Low	1938 High	Low	Sales Oct. 1940	Sales 1940	Bonds	Date Due	Int. %	Int. Period	Outstanding $
NEW YORK STOCK EXCHANGE													
103	105¼	100⅛	103¾	98	105⅝	99¼	157,000	1,955,000	Amer. I. G. Chem. Conv.	1949	5½	M-N	$22,400,000
30½	41	27½	41½	19	38	25¼	45,000	872,000	Anglo Chilean Nitrate inc. deb.	1967	4½	J	10,400,000
105⅜	106⅞	100	102½	90	94	93	51,000	1,143,000	Industrial Rayon	1948	4½	J-J	7,100,000
28¼	39⅝	27	37	21½	35⅝	24⅝	179,000	1,414,000	Lautaro Nitrate inc. deb.	1975	4	J-D	27,200,000
21	21	21	30	16	35⅝	24⅝	......	8,000	Ruhr Chem.	1948	6	A-O	1,500,000
97⅞	98	93½	95⅝	88⅝	...	...	827,000	6,529,000	Shell Union Oil	1954	2½	J-J	85,000,000
104	106⅝	101⅛	106¼	97⅛	105⅝	100	152,000	2,409,000	Standard Oil Co. (New Jersey) deb.	1961	3	J-D	85,000,000
104¾	106⅝	100⅝	106⅛	94¼	103	98	188,000	2,394,000	Standard Oil Co. (New Jersey) deb.	1953	2¾	J-J	50,000,000
106½	106⅝	102	105⅞	95¼	...	...	154,000	2,892,000	Texas Corp.	1959	3	A-O	40,000,000

* Paid in 1939, including extras but excluding dividends paid in stock. ** For either fiscal or calendar year.

Naval Stores, 1939-40

(Continued from August, 1940—Page 223)

Statistics reported on these two pages covering seasons of 1939-40 and 1938-39 are taken from the annual report of the Bureau of Agricultural Chemistry and Engineering, U. S. Department of Agriculture, compiled by C. F. Speh, Naval Stores Research Division.

The Bureau believes and hopes that the new form of presenting these data will facilitate comparisons with the previous year.

Statistics reported are expressed in commercial units, for turpentine barrels of 50 gallons, and for rosin barrels of approximately 500 pounds gross weight. Where information was available, drums of rosin were converted to 500-pound barrels.

The figures compiled from government and other sources are not represented as being exact or complete, but are the results of an effort to obtain reports from each producer and from dealers and consumers.

Consumption

During the season 1939-40 the apparent consumption of Rosin in the United States increased about 17.4 % over the 1938-39 season. The industries accounting for the largest gains were adhesive and plastics with 51.8%, chemicals and pharmaceuticals with 32.7%, ester gum and synthetic resins with 16.8%, paint, varnish and lacquers with 20.9%, and oils and greases with 30.7%. Consumption of turpentine increased 13.5% in the season 1939-40 over 1938-39. One of the largest gainers here was the chemical and pharmaceutical industry with 51%.

Imports and Exports

Imports of rosin took a large jump during 1939-40 over 1938-39, the increase amounting to about 660%. Imports of turpentine decreased slightly. Nearly all of the imports were received from Mexico.

Exports of nearly all the naval stores products made substantial gains with the United Kingdom being the largest taker.

For comparison with earlier periods refer to Statistical and Technical Data Section, p. 113, July, 1937; p. 119, January, 1938; p. 697, December, 1938; p. 623, November, 1939; p. 767, December, 1939; p. 119, January, 1940 and p. 223, August, 1940.

Reported Consumption of Rosin in United States (Bbls.-500 lbs.)

(By naval stores seasons beginning April 1 and ending the following March 31)

	1939-40 (Apr.-Mar.) Total	Gum[1]	Wood[1]	1938-39 (Apr.-Mar.) Total	Gum[3]	Wood[3]
Abattoirs	1,291	......	......	2,173	......	......
Adhesives & plastics	17,968	......	......	11,816	......	......
Asphaltic products	1,076	......	......	968	......	......
Automobiles & wagons	346	......	......	328	......	......
Chemicals & pharmaceuticals	163,583	......	......	123,339	......	......
Ester gum & synth. resins	127,036	......	......	108,611	......	......
Foundries & f'dry supplies	10,852	......	......	7,950	......	......
Furniture	10	......	......	18	......	......
Insecticides & disinfectants	5,125	......	......	3,963	......	......
Linoleum & floor covering	37,259	......	......	27,313	......	......
Matches	3,384	......	......	2,240	......	......
Oils & greases	31,076	......	......	23,767	......	......
Paint, varnish & lacquer	157,519	......	......	130,278	......	......
Paper & paper size	355,622	......	......	318,361	......	......
Printing ink	13,381	......	......	11,564	......	......
Railroads & shipyards	1,072	......	......	1,365	......	......
Rubber	4,903	......	......	3,919	......	......
Shoe polish & shoe mat'ls.	9,228	......	......	10,677	......	......
Soap	235,014	......	......	234,927	......	......
Other industries	4,363	......	......	4,415	......	......
Total industrial reported	1,180,108	717,965	462,143	1,027,992	......	......
Not accounted for[2]	192,955	2,858	190,097	140,735	......	......
Apparent U. S. consumption	1,373,063	720,823	652,240	1,168,727	......	......

[1] Separation of gum and wood rosin consumption will be limited for this year to the total reported.
[2] Principally unreported industrial consumption of rosin and rosin for distribution through retailers who sell in small quantities to ultimate consumers.
[3] Not available.

Reported Consumption of Turpentine in United States (Bbls.-50 gal.)

(By naval stores seasons beginning April 1 and ending the following March 31)

	1939-40 (Apr.-Mar.) Total	Gum[1]	Wood[1]	1938-39 (Apr.-Mar.) Total	Gum[3]	Wood[3]
Abattoirs	0	......	......	0	......	......
Adhesives & plastics	716	......	......	526	......	......
Asphaltic products	1	......	......	1	......	......
Automobiles & wagons	374	......	......	354	......	......
Chemicals & pharmaceuticals	36,026	......	......	22,249	......	......
Ester gum & synthetic resins	0	......	......	9	......	......
Foundries & f'dry supplies	659	......	......	576	......	......
Furniture	526	......	......	521	......	......
Insecticides & disinfectants	354	......	......	452	......	......
Linoleum & floor covering	147	......	......	68	......	......
Matches	0	......	......	0	......	......
Oils & greases	24	......	......	37	......	......
Paint, varnish & lacquer	53,730	......	......	51,292	......	......
Paper and paper size	0	......	......	0	......	......
Printing ink	179	......	......	489	......	......
Railroads & shipyards	5,071	......	......	3,872	......	......
Rubber	149	......	......	125	......	......
Shoe polish & shoe mat'ls.	12,505	......	......	10,711	......	......
Soap	0	......	......	213	......	......
Other Industries	801	......	......	1,800	......	......
Total industrial reported	111,262	59,936	51,326	93,295	......	......
Not accounted for[2]	365,626	254,368	111,258	326,719	......	......
Apparent U. S. consumption	476,888	314,304	162,584	420,014	......	......

[1] Separation of gum and wood turpentine consumption will be limited for this year to the total reported.
[2] Principally unreported distribution of turpentine through retailers who sell in small quantities to ultimate consumers.
[3] Not available.

UNITED STATES IMPORTS OF NAVAL STORES

(By naval stores seasons beginning April 1 and ending the following March 31)

Imports, Spirits of Turpentine (Bbls.—50 gals.)

Shipped from:	1939-40	1938-39
Austria	0	0
Canada	0	0
France	0	4
Germany	0	0
Greece	0	0
Italy	0	0
Mexico	16,464	16,567
Netherlands	0	0
Norway	0	0
Portugal	0	0
Soviet Russia	0	0
Spain	0	0
Sweden	0	0
United Kingdom	0	0
Other Countries	28	0
Totals	16,492	16,571

Imports, Rosin (Bbls.—500 lbs. gross)

Shipped from:	1939-40	1938-39
Austria	0	0
Canada	0	0
France	1	29
Germany	0	0
Greece	0	0
Italy	0	0
Mexico	2,372	311
Netherlands	0	0
Norway	0	0
Portugal	0	0
Soviet Russia	0	0
Spain	0	0
Sweden	0	0
United Kingdom	0	0
Other Countries	25	0
Totals	2,398	340

(Source of information—Bureau of Foreign and Domestic Commerce.)

Note: As Government records of imports of turpentine and rosin do not require any declaration as to whether they are gum or wood products, the available statistics in consequence show only total turpentine and total rosin imports. However, it appears probable that all imports reported above were in fact gum spirits of turpentine and gum rosin.

Naval Stores, 1939-40 Consumption, Exports, Imports, Prices—p. 11

Naval Stores, 1939-40

Consumption, Exports, Imports, Prices—p. 12

UNITED STATES EXPORTS OF ROSIN

(By naval stores seasons beginning April 1 and ending the following March 31)

Total Exports of Rosin[1]
(Bbls.—500 lbs. gross)

Destination	1939-40	1938-39
United Kingdom	291,481	207,720
Germany and No. Europe	224,233	193,666
Italy and So. Europe	30,464	40,270
Argentina	55,302	41,800
Brazil	72,372	59,646
Other South America	42,772	32,685
Japan	43,841	58,624
Australia and New Zealand	44,486	25,814
Netherlands East Indies	33,729	42,138
Canada	61,902	48,508
All Other Exports	75,298	70,510
Totals	975,880	821,381

Exports of Gum Rosin

Destination	1939-40	1938-39
United Kingdom	179,792	125,844
Germany and No. Europe	134,287	109,695
Italy and So. Europe	17,938	29,287
Argentina	32,260	25,515
Brazil	18,662	23,069
Other South America	25,061	18,924
Japan	35,476	51,027
Australia and New Zealand	34,827	16,995
Netherlands East Indies	16,068	25,355
Canada	42,676	36,127
All Other Exports	51,798	37,368
Totals	588,845	499,206

Exports of Wood Rosin

Destination	1939-40	1938-39
United Kingdom	111,689	81,876
Germany and No. Europe	89,946	83,971
Italy and So. Europe	12,526	10,983
Argentina	23,042	16,285
Brazil	53,710	36,577
Other South America	17,711	13,761
Japan	8,365	7,597
Australia and New Zealand	9,659	8,819
Netherlands East Indies	17,661	16,783
Canada	19,226	12,381
All Other Exports	23,500	33,142
Totals	387,035	322,175

[1] Includes product commonly referred to as "B Wood Rosin."

(Source of information—Bureau of Foreign and Domestic Commerce)

UNITED STATES EXPORTS OF TURPENTINE

(By naval stores seasons beginning April 1 and ending the following March 31)

Total Exports of Turpentine
(Bbls.—50 gal.)

Destination	1939-40	1938-39
United Kingdom	115,153	104,842
Germany and No. Europe	36,688	42,234
Italy and So. Europe	12,283	3,893
Argentina	4,357	3,160
Brazil	3,531	2,546
Other South America	5,165	4,161
Japan	37	723
Australia and New Zealand	20,282	16,031
Netherlands East Indies	67	28
Canada	28,416	24,223
All Other Exports	10,459	8,385
Totals	238,438	210,226

Exports, Gum Spirits of Turpentine

Destination	1939-40	1938-39
United Kingdom	93,265	92,284
Germany and No. Europe	34,301	33,990
Italy and So. Europe	4,116	1,136
Argentina	3,778	2,785
Brazil	2,355	1,903
Other South America	4,355	3,433
Japan	37	328
Australia and New Zealand	15,278	12,043
Netherlands East Indies	58	19
Canada	24,773	21,343
All Other Exports	7,368	5,645
Totals	189,684	174,909

Exports, Wood Turpentine

Destination	1939-40	1938-39
United Kingdom	21,888	12,558
Germany and No. Europe	4,387	8,244
Italy and So. Europe	8,167	2,757
Argentina	579	375
Brazil	1,176	643
Other South America	810	728
Japan	—	395
Australia and New Zealand	5,004	3,988
Netherlands East Indies	9	9
Canada	3,643	2,880
All Other Exports	3,091	2,740
Totals	48,754	35,317

(Source of information—Bureau of Foreign and Domestic Commerce)

WEIGHTED AVERAGE MONTHLY AND SEASON PRICES OF GUM SPIRITS OF TURPENTINE—1921-22 to 1939-40

Cents per Gallon

Season	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Average
1921-22 ...	53.17	61.83	52.62	53.06	56.55	65.15	69.04	73.44	74.14	83.86	86.07	80.92	62.62
1922-23 ...	79.50	86.07	106.54	113.07	110.61	123.31	145.94	151.25	130.71	145.87	143.29	147.53	119.82
1923-24 ...	145.32	105.48	94.74	88.73	88.83	91.61	83.86	88.50	86.36	94.88	95.37	95.72	95.22
1924-25 ...	91.82	83.49	77.63	77.66	82.99	82.28	81.43	79.24	77.64	86.40	87.95	86.00	81.30
1925-26 ...	87.39	97.39	92.48	90.08	95.29	106.25	105.56	104.79	93.77	99.72	92.69	93.81	96.66
1926-27 ...	89.86	79.67	80.14	82.07	89.31	86.00	84.75	82.69	80.85	76.07	68.00	67.38	82.62
1927-28 ...	60.61	56.41	51.24	50.64	52.31	49.22	46.71	44.36	49.49	55.03	54.94	54.82	51.38
1928-29 ...	52.06	47.87	50.87	49.83	47.58	46.40	48.18	54.22	55.50	56.47	53.16	52.42	50.54
1929-30 ...	48.78	48.90	46.83	47.11	46.68	49.74	50.82	47.85	48.13	49.42	50.12	50.67	48.28
1930-31 ...	48.42	43.51	41.33	37.56	35.32	38.26	35.60	37.03	36.14	38.11	39.97	47.81	39.34
1931-32 ...	50.44	49.42	50.69	39.77	31.40	31.88	31.17	35.21	33.83	34.68	34.84	40.06	40.10
1932-33 ...	39.50	39.44	38.64	35.94	37.68	41.09	40.86	39.71	37.04	39.88	39.75	39.46	38.82
1933-34 ...	37.88	42.47	40.39	46.39	42.83	41.97	40.81	42.14	42.07	47.44	57.00	55.00	42.72
1934-35 ...	53.66	50.81	46.44	42.82	41.83	41.19	46.59	48.00	46.46	49.59	50.53	49.71	45.64
1935-36 ...	47.37	47.07	44.46	42.40	38.47	40.91	45.76	44.92	43.96	45.19	44.44	39.31	43.56
1936-37 ...	37.43	36.26	35.86	36.44	38.73	37.19	36.33	38.25	41.59	43.13	41.84	39.01	37.48
1937-38 ...	35.97	35.83	34.07	33.44	31.94	29.93	27.28	26.92	26.14	28.18	26.47	25.42	31.36
1938-39 ...	23.18	22.69	22.56	23.24	22.53	20.92	22.81	22.32	22.31	24.78	25.56	28.42	22.61
1939-40 ...	24.96	23.93	24.00	24.11	23.72	26.11	27.16	25.72	27.00	30.17	32.91	31.67	25.31

WEIGHTED AVERAGE MONTHLY AND SEASON PRICES OF GUM ROSIN (280 lb. Bbls.)—1921-22 to 1939-40

In dollars per barrel of 280 pounds gross weight

Season	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Average
1921-22 ...	4.00	4.42	3.87	3.78	4.00	4.39	4.34	4.42	4.47	4.21	4.22	4.10	4.20
1922-23 ...	4.35	4.79	5.09	5.23	5.25	5.52	5.75	5.48	5.14	5.07	5.15	5.17	5.20
1923-24 ...	4.96	4.88	4.82	4.78	4.66	4.62	4.57	4.44	4.80	4.88	4.69	4.74	4.67
1924-25 ...	4.81	4.88	4.72	4.71	4.94	5.20	5.99	6.46	6.49	7.19	7.28	7.24	5.61
1925-26 ...	7.52	9.01	8.78	9.15	10.22	13.02	14.33	14.22	13.05	12.09	13.34	12.66	11.11
1926-27 ...	11.66	10.42	12.18	13.09	12.53	13.92	12.32	11.64	11.64	11.98	11.98	10.42	12.20
1927-28 ...	9.77	9.11	8.46	8.32	8.96	8.47	7.64	6.87	7.64	8.61	8.38	8.58	8.35
1928-29 ...	8.31	7.68	8.24	8.53	8.32	8.06	8.20	8.53	8.57	8.57	8.36	8.08	8.29
1929-30 ...	7.50	7.39	7.31	7.49	7.44	7.87	8.16	7.62	7.34	7.48	7.45	7.22	7.54
1930-31 ...	6.85	6.16	5.65	4.78	4.42	4.77	4.37	4.45	4.46	4.30	4.52	4.95	5.02
1931-32 ...	4.96	5.01	5.26	3.95	3.12	3.04	2.95	3.27	3.10	3.10	3.18	3.67	3.89
1932-33 ...	2.98	2.91	2.74	2.54	2.32	3.23	3.07	2.94	2.92	2.98	2.90	2.90	2.83
1933-34 ...	2.95	3.54	3.53	4.09	3.83	3.91	3.86	3.92	3.90	4.24	5.04	5.06	3.88
1934-35 ...	5.09	4.87	4.55	4.30	4.37	4.43	4.52	4.45	4.48	4.73	4.86	4.79	4.55
1935-36 ...	4.67	4.72	4.58	4.44	4.12	4.38	4.81	4.71	4.55	4.60	4.57	4.60	4.54
1936-37 ...	4.38	4.32	4.70	5.42	6.68	6.00	6.23	7.26	9.28	10.20	9.76	8.97	6.42
1937-38 ...	8.07	8.30	8.15	8.00	7.98	8.03	7.35	6.21	5.55	5.92	5.38	4.73	7.35
1938-39 ...	4.87	4.67	4.81	5.15	4.98	4.72	5.28	5.64	5.09	5.12	5.29	5.79	5.02
1939-40 ...	5.22	5.19	5.34	5.49	5.34	5.66	5.73	5.54	5.39	5.54	5.51	5.59	5.44

Note: Rosin Grades included in average prices follow—X, WW, WG, N, M, K, I, H, G, F, E, D, B.

New Trade Marks of the Month

OPALON
433,018

SANI-SAN
427,143

DISSOLVO
433,078

PLEXOMIN-B
427,723

K&W
431,454

WILSONITE
433,590

NU-LEAF
433,849

CALFAST
434,561

MAZLO
433,422

KEYCUT
434,121

DU PONT
433,053

CRYSTLE
PRODUCT OF MARBLETTE
432,772

MELANAC
434,262

RAHNOUS
433,027

REX
405,947

BIOSYMPLEX
422,384

MAN-O-WAR
MADE IN U.S.A.
QUICK DRYING
CORRECTION FLUID
FOR ALL DRY STENCILS
PRICE 50 CENTS
ONE FLUID OZ.
RONNIE INC.
BALTIMORE MD.
INFLAMMABLE
430,563

LEATHER BALM
431,935

LETTUSEAL
433,326

Panesso
434,730

FACTEX
433,585

Venomin
433,681

CETEJEL
433,828

COLOREX
433,981

AMAFIX
434,100

TITANASIL
433,509

DEX
434,319

CHEMNIOTIN
434,378

CARBIC
434,477

Super-Sorb
434,700

PARCO LUBRITE
434,131

B
401,958

PYRONAMEL
432,547

SUPER-D-HYDRATOR
426,170

ANTREGONE
431,510

ZEAL
433,956

Trade Mark Descriptions †

433,018. Monsanto Chemical Co., St. Louis, Mo.; June 14, 1940; for artificial resins. Since May 28, 1940.

427,143. Oneida Paper Products, Inc., New York, N. Y.; Jan. 4, 1940; for cellulose film glassine and paper bags, such as sandwich bags. Since Nov. 17, 1939.

433,078. E. I. du Pont de Nemours & Co., Wilmington, Del.; June 13, 1940; for cleaning compounds in the nature of grease solvents. Since Mar. 29, 1940.

427,723. Wm. G. Scholts, Los Angeles, Calif.; Jan. 22, 1940; for vitamin and mineral food ingredient. Since Oct. 30, 1939.

431,454. Kerkling & Co., Inc., Bloomington, Ind.; May 1, 1940; for fluid sealing compound used particularly for repairing cracked engine cylinder blocks, engine cooling system radiators and the like. Since Feb. 5, 1940.

433,590. Andrew Wilson, Inc., Springfield, N. J.; July 1, 1940; for insecticides and fungicides. Since April 8, 1930.

433,849. California Spray-Chemical Corp., Wilmington, Del., and Richmond, Calif; July 11, 1940; for parasiticides. Since July 1, 1940.

434,561. General Chemical Co., New York, N. Y.; Aug. 1, 1940; for insecticides. Since July 15, 1940.

433,422. American Magnesium Corp., Cleveland, O.; June 27, 1940; for magnesium and magnesium alloys. Since Sept., 1937.

434,121. Keystone Lubricating Co., Phila., Pa.; July 18, 1940; for lubricating oils and particularly cutting oils; since Mar. 15, 1933.

433,053. E. I. du Pont de Nemours & Co., Wilmington, Del.; June 15, 1940; for electroplating equipment—namely, motor generators and rheostats. Since Oct. 31, 1936.

432,772. The Marblette Corp., Long Island City, N. Y.; June 7, 1940; for resins. Since April 25, 1940.

434,262. American Cyanamid Co., New York, N. Y.; July 24, 1940; for condensation products of aldehydes and amines—namely, synthetic resins and composition thereof. Since May 20, 1940.

433,027. Earl W. Rahn (E. W. Rahn) Cleveland, O.; June 14, 1940; for pharmaceutical preparations for the treatment of hay fever, asthma, nasal catarrh, head colds, and bronchial and throat affections. Since July 1, 1915.

405,947. Vio Bin Corp., Chicago, Ill.; May 2, 1938; for wheat germ oil for use as a supplement to animal foods. Since Dec. 1, 1937.

422,384. Société Beaune & Cie., Paris, France; Aug. 7, 1939; for pharmaceutical products and particularly organotherapeutical products, namely hormone products, glandular products, ovarian secretions. Since April 15, 1938.

430,563. Ronnie, Inc., Baltimore, Md.; April 9, 1940; for correction fluid, a chemical fluid used in connection with correcting stencils. Since June, 1938.

431,935. Harry L. Wilensky, New York, N. Y.; May 14, 1940; for leather softening and preserving cream. Since April 16, 1940.

433,326. Fruit & Vegetable Processing Co., Santa Monica, Calif.; June 24, 1940; for chemical preparation used for the purpose of whitening vegetables. Since Mar. 12, 1940.

434,730. Standard Oil Co. of N. J., Wilmington, Del.; Aug. 6, 1940; for hydrocarbon gases for industrial and commercial purposes. Since Mar. 4, 1937.

433,585. The Stamford Rubber Supply Co., Stamford, Conn.; July 1, 1940; for rubber substitutes—namely, vulcanized fatty oils and vulcanized fatty acids. Since April 23, 1940.

433,681. The Venomin Co., Venice, Fla.; July 3, 1940; for venom extracted from poisonous snakes for treatment of arthritis and pains in carcinoma. Since June 29, 1940.

433,828. The Wm. S. Merrell Co., Cincinnati, O.; July 10, 1940; for antiseptic healing jelly for local application. Since June 10, 1940.

433,981. Niagara Smelting Corp., Niagara Falls, N. Y.; July 15, 1940; for stripper preparation, containing titanium trichloride, titanium tetrachloride, zinc chloride, hydrochloric acid, water and stabilizer. Since June 2, 1939.

434,100. American Aniline Products, Inc., New York, N. Y.; July 18, 1940; for finishing chemical compounds for textiles. Since June 25, 1940.

433,509. The Titanium Alloy Mfg. Co., Niagara Falls, N. Y.; June 28, 1940; for compounds of titanium and mixtures containing the same. Since Sept. 5, 1935.

434,319. Carleton Charles Corner (The Dexco Prods. Co.), Cleveland, O.; July 25, 1940; for bleach, deodorizer and disinfectant. Since July 1, 1940.

434,378. E. R. Squibb & Sons, New York, N. Y.; July 26, 1940; for estrogenic preparations. Since July 11, 1940.

434,477. Carbide and Carbon Chemicals Corp., New York, N. Y.; July 30, 1940; for acid anhydrides and their derivatives, generally in liquid or solid form, used in the production of resins, plasticizers, and other chemicals. Since Aug. 16, 1938.

434,700. Floridin Company, Warren, Pa.; Aug. 5, 1940; for magnesium silicate having various industrial uses. Since June 24, 1940.

434,131. Parker Rust-Proof Co., Detroit, Mich.; July 18, 1940; for chemicals for treating iron and steel to prevent surface wear. Since July 7, 1940.

401,958. Burndy Engineering Co., Inc., New York, N. Y.; Jan. 14, 1938; for ferrous, copper, and aluminum alloys sold as such in the form of rods, sheet material, and rough castings. Since June 15, 1935.

432,547. The Porcelain Enamel and Mfg. Co., Baltimore, Md.; May 31, 1940; for porcelain enamel frits. Since May 3, 1940.

426,170. Not subject to opposition. The Sharples Corp., Phila., Pa.; Dec. 2, 1939; for centrifugal separators designed to separate a solid constituent from one or more liquid constituents of a mixture, or to separate one or more liquid constituents from another liquid constituent or liquid constituents of a mixture, or to separate one or more solid constituents and one or more liquid constituents simultaneously and separately from a mixture thereof with further liquid and/or solid constituents. Since July 29, 1939.

431,510. Abbott Laboratories, North Chicago, Ill.; May 3, 1940; for anterior pituitary-like, chorionic gonadotropic hormone. Since April 23, 1940.

433,956. Bartlett Chemicals, Inc., New Orleans, La.; July 15, 1940; for cleaning solution consisting principally of a sodium hypochlorite compound used in washing and other household uses and also having incidental bleaching, deodorant, and disinfecting properties. Since January, 1940.

423,872. Advance Aluminum Castings Corp., Chicago, Ill.; Sept. 23, 1939; for cleaning and polishing material and steel wool pads for cleaning and polishing cooking utensils and the like, and other metal articles. Since October, 1925.

429,994. Edgar A. Murray Co., Detroit, Mich.; Mar. 26, 1940; for cleaning, cleansing, and detergent material particularly adapted for use on walls, floors, upholstery, and for kitchen, laundry, and household use generally. Since 1932.

433,811. G. & W. H. Corson, Inc., Plymouth Meeting, Pa.; July 10, 1940; for selectively calcined dolomite consisting of

† Trademarks reproduced and described include those appearing in *Official Gazette of the U. S. Patent Office*, September 10 to October 15, 1940.

New Trade Marks of the Month

WOW
423,872

DOOM
429,994

ACTOMAG
433,811

CISCOSOLV
434,013

Krene
433,899

NU-LIFE
433,237

HUR DOL
434,067

CHEMIGUM
435,716

POLY-B
432,106

VI-LITRON
432,107

DOME
432,245

EVEREADY
434,541

NNO
434,962

PENOZONE
434,996

PENZONE
434,997

RESIPON
435,153

STIX-QUIK
419,956

CROP-GAIN
435,326

KIRKSITE
433,172

POCKET LAUNDRY
434,077

Hilts LABORATORIES LIMITED
430,960

MOTORTONE
434,068

ALKA-COINS
434,831

MASTER MIXED
431,501

PLAST-ALUMINUM
435,063

NuZip
435,255

BETA-CONCEMIN
435,396

SHELLECTRIC
433,939

NU-TRO
432,109

Syn-Char
431,655

CMSZ
434,779

KALUM
429,241

KYS-ITE
430,987

HYKINONE
433,548

ANKORDYE
433,880

MAGMASIL
435,204

SUPAVITE
435,702

NEMBU-FEDRIN
435,744

SULFAST
435,756

ATOMITE 78
435,049

SUPER 135
435,050

ALKIRON
434,304

DIOCYL
434,660

(Trade Mark Descriptions Continued)

magnesium oxide and calcium carbonate. Since June 24, 1940.

434,013. Cities Service Oil Co., Bartlesville, Okla.; July 16, 1940; for solvents to be used in the manufacture of paints, varnishes, lacquers, and the like. Since Feb. 17, 1937.

433,899. National Carbon Co., Inc., New York, N. Y.; July 12, 1940; for pliant synthetic plastic fabrics, sheetings, or film. Since June 17, 1940.

433,237. Albert Isserson (Nu-Life Products Co.), Cleveland, O.; June 20, 1940; for metal polish and cleaner, window cleaner and polish, liquid pine cleaner for enameled ware, and cement or concrete garage floor cleaner. Since June 1, 1940.

434,067. William J. Hurley (Hur-Dol Sales Co.), Pottsville, Pa.; July 17, 1940; for concentrated grease solvent and cleaner. Since September, 1937.

435,716. The Goodyear Tire & Rubber Co., Akron, O.; Sept. 6, 1940; for tires, inner tubes, hose, belts and belting made principally or wholly of a synthetic rubber composition. Since Aug. 30, 1940.

432,106. U. S. Vitamin Corp., New York, N. Y.; May 18, 1940; for vitamin preparations. Since Nov. 1, 1938.

432,107. U. S. Vitamin Corp., New York N. Y.; May 18, 1940; for liver concentrate and iron preparation with vitamins. Since Mar. 11, 1937.

432,245. Dome Chemicals, Inc., New York, N. Y.; May 23, 1940; for tablets for forming Burrough's solution, and solutions and pastes for treatment of skin ailments of the scalp and for psoriasis. Since April 1, 1940.

434,541. National Carbon Co., Inc., New York, N. Y.; July 31, 1940; for liquid chemical preparations for use as coolants and for use for brake fluids, fluids for liquid transmission, shock absorbers and arresting gears, and for hydraulic operated steam valves, hydraulic ship controls, and hydraulic back pressure valves for acetylene and similar installations. Since May 24, 1940.

434,962. Atlas Powder Co., Wilmington, Del.; Aug. 14, 1940; for agricultural parasiticides. Since June 12, 1940.

434,996. Pennsylvania Salt Mfg. Co., Phila., Pa.; Aug. 14, 1940; for hydrogen peroxide. Since July 29, 1940.

434,997. Pennsylvania Salt Mfg. Co., Phila., Pa.; Aug. 14, 1940; for hydrogen peroxide. Since July 29, 1940.

435,153. Arkansas Co., Inc., Newark, N. J.; Aug. 20, 1940; for products for use in processing textiles. Since Oct. 27, 1939.

419,956. Not subject to opposition. Weldon Draper (The Tricosal Co.), Los Angeles, Calif.; May 29, 1939; for ingredients of sand, cement, and a patented liquid formula which when combined, form a fast setting concrete. Since May 16, 1939.

435,326. Tovrea Packing Co., Phoenix, Ariz.; Aug. 23, 1940; for insecticides. Since July 19, 1940.

433,172. Morris P. Kirk & Sons, Inc., Los Angeles, Calif.; June 19, 1940; for nonferrous metals and alloys—namely, zinc-aluminum-copper-magnesium alloys. Since 1930.

434,077. Cyrus F. Manierre (Solvent Products Co.), New York, N. Y.; July 17, 1940; for washing fluid. Since June 5, 1940.

430,960. Hilts Laboratories, Ltd.; Honolulu, Hawaii; April 19, 1940; for insecticides, disinfectants, and alkalies. Since Feb. 7, 1935.

434,068. William J. Hurley (Hur-Dol Sales Co.), Pottsville, Pa.; July 17, 1940; for cleaning solvent for dissolving carbon in internal combustion engines and gas lines of engines. Since October, 1937.

434,831. Harmon Chemicals, Inc., New York, N. Y., and Bklyn; Aug. 9, 1940; for medicated tablets for douches. Since June, 1940.

431,501. Sears, Roebuck and Co., Chicago, Ill.; May 2, 1940; for plastic which hardens on exposure to air to form a substance resembling wood which may be used for the repair of broken furniture of wood and like material, and filling of holes and cracks in any surface. Since July 12, 1939.

435,063. Plastic Metals, Inc., Johnstown, Pa.; Aug. 16, 1940; for powdered metal for use in the production of shaped and integrated metal articles. Since May 25, 1940.

435,255. The Pennzoil Co., Los Angeles, Calif.; Aug. 22, 1940; for chemical preparation used for the removal of gum, varnish, and sludge deposits in internal combustion engine cylinders and associated parts. Since June 1, 1939.

435,396. The Wm. S. Merrell Co., Cincinnati, O.; Aug. 26, 1940; for vitamin preparation. Since July 1, 1940.

433,939. Shell Oil Co., Inc., San Francisco, Calif.; July 13, 1940; for lubricating oil and transformer oil, i.e., oil used with oil-immersed transformers. Since May 23, 1940.

432,109. Walter R. J. Woock (W. & R. Laboratories), Auburn, Calif.; May 18, 1940; for preparation for removing paint, varnish, enamel, and wax from wood surfaces such as floors. Since April 14, 1940.

431,655. R. Mackellar's Sons Co., Peekskill, N. Y.; May 7, 1940; for processed heat-resisting charcoal. Since Oct. 26, 1938.

434,779. Electro Metallurgical Co., New York, N. Y.; Aug. 8, 1940; for ferrous metal alloys. Since July 19, 1940.

429,241. Stephen J. Angland (Kalum Labs.), Washington, D. C., and Chicago, Ill.; Mar. 5, 1940; for antacid emollient. Since May 1, 1938.

430,987. Keyes Fibre Co., Waterville, Maine; April 22, 1940; for resin bearing fibrous articles—namely, plates, dishes, trays, and cups. Since Mar. 22, 1940.

433,548. Abbott Laboratories, North Chicago, Ill.; July 1, 1940; for a product having the properties of vitamin K. Since June 21, 1940.

433,880. Aqua-Sec Corp., New York, N. Y.; July 12, 1940; for chemical preparations for printing and dyeing textiles, fabrics, and textile materials. Since June, 1939.

435,204. Gane and Ingram, Inc., New York, N. Y.; Aug. 21, 1940; for medicinal product used in the treatment of peptic ulcer and digestion disorders. Since July 8, 1940.

435,702. Angier Chemical Co., Boston, Mass.; Sept. 6, 1940; for vitamin capsules. Since May 11, 1940.

435,744. Abbott Laboratories, N. Chicago, Ill.; Sept. 7, 1940; for product for the treatment of hay fever and asthma. Since Aug. 16, 1940.

435,756. General Chemical Co., New York, N. Y.; Sept. 7, 1940; for insecticides and fungicides. Since July 23, 1940.

435,049. W. T. Dinneen, San Francisco, Calif.; Aug. 16, 1940; for explosive powder. Since Nov. 14, 1938.

435,050. W. T. Dinneen, San Francisco, Calif.; Aug. 16, 1940; for explosive powder. Since Nov. 14, 1938.

434,304. Ansbacher Siegle Corp., New York, N. Y.; July 25, 1940; for blue pigment for printing inks. Since Oct. 18, 1939.

434,660. The Wm. S. Merrell Co., Cincinnati, O.; Aug. 3, 1940; for antiseptic and anesthetic ointment. Since July 11, 1940.

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A Complete Check—List of Products, Chemicals, Process Industries

Agricultural Chemicals

Process for making synthetic manure. No. 2,218,659. Martin Leatherman.

Cellulose

Process preparing oil-in-water cellulose derivative emulsions having about a 25-60% non-volatile content and a paste-like consistency. No. 2,216,233. Alfred Dreyling and William W. Lewers to E. I. du Pont de Nemours & Co.

Process for production colored regenerated cellulose artificial filaments. No. 2,216,793. Percy Fred. Combe Sowter and Reuben Betteridge to Celanese Corp.

Cellulose derivative compositions of matter and articles produced therefrom. No. 2,216,827. James A. Mitchell to E. I. du Pont de Nemours & Co.

Process purifying a crude solid cellulose acetate plasticizer. No. 2,217,706. Marvin J. Reid to Eastman Kodak Co.

Method of making shaped articles containing organic derivatives of cellulose. No. 2,217,734. Camille Dreyfus.

Alkyl ethers of cellulose. No. 2,217,904. Frederick C. Hahn to E. I. du Pont de Nemours & Co.

Process of producing articles from cellulose acetate. No. 2,218,029. Emil Hubert, Rudolf Hofmann and Heinrich Pabst to I. G. Farbenindustrie Aktiengesellschaft.

Method preparing comminuted cellulose. No. 2,218,235. Charles L. Fletcher and Guy A. Kirton to Eastman Kodak Co.

Method pretreatment of cellulose in advance of esterification thereof. No. 2,218,448. Coleman R. Caryl to American Cyanamid Co.

In process for stabilization cellulose ethers against thermal decomposition, step of treating solution of cellulose ether in inert solvent with diazo-methane. No. 2,218,566. Elwood V. White to The Dow Chemical Co.

Preparation of alkali hemicellulose. No. 2,218,567. Elwood V. White to The Dow Chemical Co.

Plant for continuous manufacture of alkali cellulose. No. 2,218,836. Heinz-Horst E. Von Kohorn zu Kornegg to Oscar Kohorn & Co., Ltd.

Chemical Specialty

Reissue. Method of treating oakwood for the aging of spirituous liquors. No. 21,589. Ernst T. Krebs and Ernst T. Krebs, Jr.

Abrasive article, grains of which are united by means of organic bond selected from class consisting of hard rubber and phenol-aldehyde resins having incorporated therein an anhydrous, water soluble metal salt. No. 2,216,135. Edwin T. Tainier to United States Rubber Co.

Diazotype photographic printing paper. No. 2,216,137. Maximilian P. Schmidt and Oskar Sus to Kalle & Co. Aktiengesellschaft.

Composition for and methods of devitalizing micro-organisms comprising pyridylmercuric nitrate. No. 2,216,140. Randolph N. Shreve and Miller W. Swaney to Mallinckrodt Chemical Works.

Process for preparation concentrated carotin decolorizing material. No. 2,216,173-174. John D. Guthrie to Standard Brands, Inc.

Luminous brick and construction comprising the same. No. 2,216,220. Edward B. Baker to General Electric Co.

An insulating enamel composition. No. 2,216,234. Frederick J. Emig to E. I. du Pont de Nemours & Co.

Process of breaking mineral oil emulsions comprising adding a sulfonation product of a polymerized mixture of olefines. No. 2,216,257. Eberhard Vogt and Karl Smeykal to William E. Currie.

Method of sterilizing fruit juices. No. 2,216,295. Gotthold H. Meinzer to California Consumers Corp.

Waterproof material and method of producing the same. No. 2,216,306. Edwin T. Wilson to A. & S. Ribbon Co.

Emulsion of asphalt in water. No. 2,216,311. William N. Davis, Orville E. Cushman and Joseph E. Fratis to Standard Oil Co. of California.

Cosmetic cream emulsion comprising oleaginous and aqueous materials and formed by sulfonating mineral oil extract while it is dissolved in liquid SO_2. No. 2,216,485. Robert L. Brandt to Colgate-Palmolive-Peet Co.

Corrosion-resisting composition. No. 2,216,514. David Isenberg to Surface-Proofing Products, Inc.

Process of retarding fat bloom at the surface of chocolate and chocolate-coated products and the resulting product. No. 2,216,660. Leon Russell Cook and John Harding Light to Wilbur-Suchard Chocolate Company, Inc.

Typographic printing ink comprising a pigment and drying oil varnish and 2-10% of "Syncera" wax. No. 2,216,690. William J. Madden to The Pennsylvania Railroad Company.

Copper Powder comprising discrete particles of copper powder carrying coatings of substantially undiffused amorphous carbon on their surfaces. No. 2,216,769. Joseph E. Drapeau, Jr., and Louis G. Klinker to The Glidden Company.

Method of seasoning wood. No. 2,216,775. James R. Helson.

Method separating smoke and fume that is separating suspended particles from gaseous or vaporous media. No. 2,216,779. Joseph Y. Houghton and Thomas Hayward Brown.

Moistureproof sheet material and moistureproofing composition. No. 2,216,812. Robert B. Flint to E. I. du Pont de Nemours & Co.

Composite refractory article for use in furnaces comprises preformed refractory body formed from magnesium orthosilicate material and a metal sheet associated with said body. No. 2,216,813. Victor Moritz.

Dentifrice containing as essential ingredients sodium metaphosphate and a calcium salt. No. 2,216,816. Rudolph A. Kuever to The Pepsodent Co.

Dentifrice consisting insoluble sodium metaphosphate and compound chosen from group consisting of magnesium oxide, magnesium hydroxide, magnesium carbonate, alkaline magnesium silicate, trimagnesium phosphate, and mono-magnesium phosphate. No. 2,216,821. Homer D. Long to The Pepsodent Co.

Moistureproof sheet material and moistureproofing composition. No. 2,216,826. James A. Mitchell to E. I. du Pont de Nemours & Co.

Art of gelatinizing or colloiding low-viscosity colloids. No. 2,217,023. Stanley P. Lovell to Beckwith Mfg. Co.

Composition for making a polychromatic printing roller or plate, method of making the same, and a polychromatic printing member. No. 2,217,065. Isaac Magath.

Process making packing material comprises impregnating fibrous porous packing with rubber, vulcanizing same and abrading so as to expose the surface fibers, puncturing material with small openings and submitting to pressure in bath of synthetic resinous solution. No. 2,217,085. Harley T. Wheeler.

Fungicidal preparation containing as active constituent a diamino diaryl methane of the benzene series. No. 2,217,207. William P. Horst to United States Rubber Co.

Protein preparation. No. 2,217,264. Charles Weizmann.

Process for protecting wood. No. 2,217,265. Francis E. Ciclak to Peter C. Reilly.

Margarine product and method of making same. No. 2,217,309. Albert K. Epstein, Benjamin R. Harris and (Marvin C. Raynolds) by Lulu E. Raynolds and The First National Bank of Chicago.

Insecticide and fumigant composition containing as toxic principle an alkene halogen thiol containing 2-6 C atoms. No. 2,217,358. Willem Coltof to Shell Development Co.

Glass-to-metal seal. Nos. 2,217,422-423. Howard Scott to Westinghouse Electric & Manufacturing Co.

Composition of matter for water treatment. No. 2,217,466. John R. Baylis to City of Chicago.

Abrasive paper and process of making the same. No. 2,217,525. Nicholas E. Oglesby to Behr-Manning Corp.

Insecticidal composition comprising a water-insoluble thio-di-arylamine. No. 2,217,566. Lloyd E. Smith to Public of U. S.

Insecticidal composition having an organic ester as toxic ingredient. No. 2,217,673. Gerald H. Coleman and Clarence L. Moyle to The Dow Chemical Co.

Improved metal fabricating lubricant comprising mineral oil, and as extreme pressure agent, a hydrogenated sulfurized abietic acid substance. No. 2,217,764. Arnold J. Morway and John C. Zimmer to Standard Oil Development Co.

Addition agent for storage battery paste. No. 2,217,787. Howard B. Birt, William C. Pritchard and Robert A. Daily to General Motors Corp.

Process for manufacturing storage battery paste. No. 2,217,814. William C. Pritchard and Robert A. Daily to General Motors Corp.

Process for producing articles of regenerated chitin and the resulting articles. No. 2,217,823. Clifford J. B. Thor to The Visking Corp.

Therapeutic agent adapted to inhibit growth of pathogenic fungi. No. 2,217,905. Charles Hoffman, Gaston Dalby and Thomas R. Schweitzer to Ward Baking Co.

Process treating tobacco to increase moisture content. No. 2,217,931. Jesse C. McCorkhill to The Guardite Corp.

Method making colored photographic print from suitable color-value negatives. No. 2,218,001. Alan M. Gundelfinger and Lyne S. Trimble to Cinecolor, Inc.

Metallic blasting and abrasive material. No. 2,218,107. Oscar E. Harder to The Globe Steel Abrasive Co.

Chemical composition consisting of 100 parts by weight cellulose acetate propionate, 50-150 parts tributyric acid ester of glycerol, said composition being characterized by extreme toughness at −18° C. No. 2,218,146. Robert E. Fothergill to E. I. du Pont de Nemours & Co.

Preparation for antisepsis of the oral cavity. No. 2,218,172. Vaman R. Kokatnur to Autoxygen, Inc.

In art of pest control, method immunizing organic matter from attack of economically harmful organisms. No. 2,218,181. Norman E. Searle and Wendell H. Tisdale to E. I. du Pont de Nemours & Co.

A photographic silver halide emulsion. No. 2,218,230. Burt H. Carroll to Eastman Kodak Co.

Chemically bonded refractory. Nos. 2,218,242-2,218,244. Frank E. Lathe, Norman P. Pitt and Lisle Hodnett to Canadian Refractories, Ltd.

Apparatus for forming pigmented film by intaglio method. No. 2,218,249. Gale F. Nadeau and Eugene R. Clearman to Eastman Kodak Co.

Method increasing viscosity of photographic gelatin solutions. No. 2,218,255. Walter J. Weyerts and Charles W. Wiederhold to Eastman Kodak Co.

Binder composition comprising pine fatty acid pitch and naphtha resin. No. 2,218,335. Earl G. Kerr to The Barrett Co.

Art of producing yeast. No. 2,218,336. Vaman R. Kokatnur to Autoxygen, Inc.

Detergent composition and process of manufacturing same. No. 2,218,472. Lucas P. Kyrides to Monsanto Chem. Co. (St. Louis).

Spark plug insulator made by sintering into dense, non-porous structure a composition consisting of aluminum oxide together with .5-20% chromium oxide. No. 2,218,584. Taine G. McDougal, Albra H. Fessler and Karl Schwartzwalder to General Motors Corp.

A dry vitamin preparation. Nos. 2,218,591 and 2,218,592. Harden F. Taylor to the Atlantic Coast Fisheries Company.

Gel retarding agent. No. 2,218,617. John H. McKenzie to Marbon Corporation.

Refractory material and process of producing same. No. 2,218,623. Richard W. Ricker to Libbey-Owens-Ford Glass Co.

Non-porous cementious material possessing improved weather and water resistance. No. 2,218,679. Dean S. Hubbell to H. H. Robertson Co.

Process treating peanuts in the shell consists in roasting and applying casein and coloring matter to seal pores of shell and add to appearance thereof. No. 2,218,713. William W. Kelly and Richard P. Tolle.

Process of producing imitation tree bark. No. 2,218,740. Wm. H. Burke to Robert C. Ware.

Process for making fluorescent screen material for cathode ray tubes. No. 2,218,750. Heinrich Hinder to Fernseh Aktien-Gesellschaft.

Abrasive article having particles bonded by a synthetic resin. No. 2,218,782. Carl E. Barnes to Norton Co.

Herbicide consisting of arsenic, oil and wetting agent all dissolved and emulsified in aqueous solution. No. 2,218,787. Thomas F. Catchings, Lamar J. Padget and Lynn H. Dawsey.

Method of making abrasive articles. No. 2,218,795. Samuel S. Kistler and Carl E. Barnes to Norton Company.

Method preventing corrosion of bearing metal alloys in presence of highly refined lubricating oil. Comprises addition of an alkyl thiocyanate having 8-14 catoms in the alkyl radical. No. 2,218,918. Clarence M. Loane and Bernard H. Shoemaker to Standard Oil Company.

Composition for preventing efflorescence on clay brick. No. 2,218,933. John G. Conte.

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Base metal salt of phosphoric acid ester as a wetting agent and detergent aid. No. 2,219,050. Louis A. Mikeska to Standard Oil Development Company.
A phosphorescent substance essentially comprising coronene and a solid polynuclear, fully hydrogenated hydrocarbon. No. 2,219,205. Leo Boente to I. G. Farbenindustrie A. G.

Coatings

Coating composition comprising aqueous emulsion including water, an unstable emulsifying agent from group consisting of ammonium resinates and ammonium soaps of drying oil acids, a filler, and a binder vehicle consisting of a drying oil and a resin. No. 2,216,180. Frank M. Beegle, and Harry L. Andrews, Jr., to Congoleum-Nairn, Inc.
Chemically stable protective composition and use thereof. No. 2,216,362. William Wilson and Paul H. Yoder, to Pyroxylin Products, Inc.
A rapid curing film-forming coating composition composed of resins. No. 2,218,474. Leonard P. Moore to American Cyanamid Company.
Blue print coating comprising a ferricyanide and ferric guanidine oxalate. No. 2,218,969. Robert Gowling Barnes to American Cyanamid Company.

Dyes, Stains, etc.

Manufacture of new azo dyestuffs. No. 2,216,299. Wilfrid H. Cliffe to Imperial Chemical Industries, Ltd.
Anthraquinone dyestuffs. No. 2,216,258. Klaus Weinand and August Modersohn to General Aniline & Film Corp.
Process producing a copper phthalocyanine coloring matter. No. 2,216,761. Allen L. Simison to Owens-Corning Fiberglas Corporation.
Process producing coloring matter of copper phthalocyanine series. No. 2,216,867. Max Wyler to Imperial Chemical Industries.
Process producing magnetic metal phthalocyanine, coloring matter. No. 2,216,868. Max Wyler to Imperial Chemical Industries, Ltd.
Process coloring an organic derivative of cellulose with an azo dye compound. No. 2,217,693. James G. McNally and Joseph B. Dickey to Eastman Kodak Co.
Process for production resist effects illuminated with vat dyestuffs on fabrics composed wholly or partly of cellulose. No. 2,217,696. Denys P. Milburn to Imperial Chemical Industries, Ltd.
Compounds of the anthraquinone series. No. 2,217,849. Frederic B. Stilmar to E. I. du Pont de Nemours & Co.
Polyazo compounds and material colored therewith. No. 2,218,231. Joseph B. Dickey and James G. McNally to Eastman Kodak Company.
Azo compounds and process for coloring therewith. No. 2,218,247. James G. McNally and Joseph B. Dickey to Eastman Kodak Co.
Metalliferous azo dyestuffs containing simultaneously the pyrazolone ring and the thiazol ring. No. 2,218,299. Max Schmid to the Society of Chemical Industry in Basle.
Process for preparing dicarbocyanine dyes. No. 2,218,450. Frances M. Hamer to Eastman Kodak Co.
Dyestuffs of the dibenzanthrone series. No. 2,218,663. Otto Stallman to E. I. du Pont de Nemours & Co.
Leuco sulfuric acid esters of vat dyestuffs of the anthanthrone series. No. 2,218,801. Werner Zerweck and Josef Riedmair to General Aniline and Film Corp.
Water-insoluble azo dyestuffs. No. 2,218,920. Heinrich Morschel and Rudolph Ritter Wolff to General Aniline and Film Corp.
Amidelike derivatives of dyestuffs and process of making same. No. 2,218,952. Charles Graenacher and Joseph Gyr and Otto Kaiser and Franz Ackemann and Heinrich Bruengger to Society of Chemical Industry.
Ortho-hydroxy azo dye. No. 2,218,986. Otto Hoffmann and Hans Lange to General Aniline and Film Corp.
Triarylmethane dyestuffs. No. 2,219,009. Wilhelm Eckert and Karl Schilling to General Aniline & Film Corp.

Equipment and Apparatus

Contrivance for charging solid fuel into water-gas producers. No. 2,216,116. Heinrich Koppers to Heinrich Koppers Gesellschaft mit beschrankter Haftung.
Apparatus for use in manufacture of hairy yarn. No. 2,216,123. Corrado Magnolfi to Celanese Corp. of America.
Temperature control system. No. 2,216,245. John M. Larson to Minneapolis-Honeywell Regulator Company.
Dry steam generator. No. 2,216,369. Leuell W. Jeffords.
Apparatus for extracting liquid from gas burdened with particles thereof. Nos. 2,216,389-390. Charles G. Hawley to Centrifix Corp.
Process of and apparatus for digesting fibrous materials. No. 2,216,649. Albert D. Merrill.
Control mechanism for temperature, humidity and the like. No. 2,216,651. Carl A. Otto to Johnson Service Company.
Apparatus for preparing infusions. No. 2,216,738. Michael Felix.
Device for chilling liquids. No. 2,216,762. Harold Bolas to Providence Braid Co.
Combined gas purifier and muffler for carbon monoxide. No. 2,216,763. Hiram H. Boyce to Glen W. Pierce.
Method and apparatus for introducing solids into a pressure system. No. 2,216,921. Harvey E. Marvel to S. F. Bowser & Co., Inc.
Method and apparatus for controlling the relative quantities of liquids in a tank. No. 2,216,977. Francis D. Mahone to Petrolite Corp., Ltd.
Continuously operable machine for the expression from solids of liquids associated therewith. No. 2,216,996. Philip D. Weston to Lever Bros. Co.
Machine for mixing or masticating rubber and like material. No. 2,217,103. Rupert T. Cooke to Francis Shaw and Co., Ltd.
Machine for forming solid carbon dioxide. No. 2,217,169. Reuben Hill to Leo M. Harvey.
A high vacuum distillation system for manufacture of mineral lubricating oils. No. 2,217,356. Ronald V. Becknell to High Vacuum Process, Inc.
Apparatus for distilling mineral oils. No. 2,217,386. John E. Schulze to High Vacuum Processes, Inc.
Dry heat thermoplastic-denture press. No. 2,217,390. Francis Taub.
A device for use in precious ore recovery apparatus. No. 2,217,532. Herman L. Wick.
Method and apparatus for dehydrating a liquid product. No. 2,217,547. Joseph M. Hall.
Apparatus for processing cord tire fabric. No. 2,217,607. Malcolm G. Anderson and Everett D. George to Wingfoot Corp.
Gas separating device for automatically discharging gas from delivery pipe of line or liquid measuring apparatus during operation thereof. No. 2,217,655. Robert S. Bassett to Sylvia Bassett.
Apparatus for mineral separation. No. 2,217,685. Ernest Kreher, Karl Kreher and Charles M. Young.
Process for continuous countercurrent contacting of at least two liquid phases substantially immiscible and differing in specific gravity. No. 2,218,080. Giacomo Bottaro.
Apparatus for vacuum distillation. No. 2,218,240. Kenneth C. D. Hickman to Distillation Products, Inc.
High speed apparatus for making soap and recovering relatively pure glycerin. No. 2,218,279. Benjamin Clayton to Refining, Inc.
Apparatus for dyeing package yarn. No. 2,218,310. Harry S. Drum, William C. Dodson and William H. Jaxheimer to Smith, Drum and Co.
Distillation column. No. 2,218,342. George B. Pegram to The Chemical Foundation, Inc.
Apparatus for compensating hygroscopic expansion of paper in printing. Peninsular-Lurton Co.
Apparatus for compensating hygroscopic expansion of paper in printing presses. No. 2,218,430. Theodore Makarius and James Verzera to Olsen Mark Corp.
Method and apparatus for filtering and dehydrating drilling mud. No. 2,218,533. Earl E. Huebotter to National Lead Co.
Reflux Ratio control for fractioning columns. No. 2,218,624. Anthony E. Robertson to Standard Oil Development Co.
Rubber Extruding apparatus. No. 2,218,751. Walter E. Humphrey to Pennsylvania Rubber Co.
Apparatus for supplying gas at a controlled rate. No. 2,218,773. Raymond W. Sparling to Wallace & Tiernan Co., Inc.
A metallurgical retort assembly. No. 2,218,806. Jesse O. Betterton and Melville F. Perkins to American Smelting and Refining Co.
A dyeing machine. No. 2,218,811. Jules L. Chaussabel.
A bubble cap assembly. No. 2,218,993. Walter H. Rupp, George L. Mateer and Thomas W. Moore to Standard Oil Development Co.
Degreasing apparatus. No. 2,219,028. Georg Wolff to Dr. Alexander Wacker, Gesellschaft fur Elektro-Chemische Industrie.
Method and device for generating a beam of ions of high velocity. No. 2,219,033. Ernst Kuhn and Hartmut Kallmann to I. G. Farbenindustrie Aktiengesellschaft.

Explosives

A detonating blasting explosive fire from self-explosive sensitizers and process for manufacture of same. No. 2,218,563. James Taylor and Vernon Harcourt Williams to Imperial Chemical Industries, Ltd.

Fine Chemicals

Aminoalkyl esters of amino-naphthalene carboxylic acids and thin acid salts. No. 2,216,155. Frederick F. Blicke to The Regents of The University of Michigan.
Preparation of pregelatinized starches. No. 2,216,179. Hans F. Bauer to Stein, Hall Mfg. Co.
Manufacture of catalysts. No. 2,216,262. Herman S. Bloch and Charles L. Thomas to Universal Oil Products Co.
Process converting normal butenes into isobutene comprises subjecting normal butene to isomerizing conditions in presence of calcined mixture of the hydrogels of silica, alumina and thoria. No. 2,216,285. Charles L. Thomas and Herman S. Bloch to Universal Oil Products Co.
Composition of matter, comprising products derived by esterification reaction between a polybasic carboxy acid and the hydroxylated product derived by an alcoholysis reaction between a blown oil and a hydroxylamine. No. 2,216,312. Melvin De Groote, Bernhard Keiser and Charles M. Blair, Jr., to Petrolite Corp., Ltd.
Process producing diketen from keten comprises introducing keten into substantially undiluted diketen and polymerizing the keten in presence of diketen while removing reaction heat. No. 2,216,450. Martin Mugdan and Johann Sixt to Consortium fur Elektrochemische Industrie, G.m.b.H.
Process catalytically converting a paraffinic hydrocarbon containing 3-4 C atoms to the molecule into mixture of hydrocarbons having higher molecular weight. No. 2,216,470. William E. Forney to Power Patents Co.
Process preparing mercapto diphenylamines comprising rearranging a 2-nitro-phenyl-sulfen-anilide by heating an alkaline alcoholic solution thereof. No. 2,216,515. Treat B. Johnson to Sharp & Dohme, Inc.
Process treating a solution of 3-acto propan-1-ol in an organic solvent with a sulfuryl halide. No. 2,216,574. Theodord Deering Perrine to Research Corp.
Surface active anionic compounds of amino alcohols. No. 2,216,617. Jacob Katz.
Surface active anionic boric acid ester compounds of amino alcohols. No. 2,216,618. Jacob Katz.
Provitamin D derived from periwinkle. No. 2,216,719. Albert Boes, deceased by Cornelia Boer-van der Wurff and Johannes van Niekerk, Engbert Harmen, Reerink, Bussum and Aart van Wijk to Hartford National Bank and Trust Company.
Phenolphthalein compounds and methods of producing the same. No. 2,216,734. Stanley E. Cairncross to Bristol-Myers Co.
Heavy Metal Salts of Thioether Carboxylic Acids. No. 2,216,751. Raphael Rosen to Standard Oil Development Co.
Process for the manufacture of saturated and unsaturated ketones of the pregnan series. No. 2,216,837. Max Hartmann and Albert Wettstein to Society of Chemical Industry in Basle.
Preparation of aryl mercaptans and resulting compositions. No. 2,216,840. Lee C. Holt to E. I. du Pont de Nemours & Co.
Durohydroquinone-Monophythyl ether and process for the manufacture of same. No. 2,216,841. Otto Isler to Hoffmann-La Roche, Inc.
Process for preparing aryl mercaptans. No. 2,216,849. Herbert A. Lubs and Alfred J. Johnson to E. I. du Pont de Nemours & Co.
Method preparing hydroxy derivative of pregnanone-20. No. 2,216,978. Russell Earl Marker to Parke, Davis & Co.
Substituted Triazines. No. 2,217,030. John Kenson Simons, to Plaskon Co., Inc.
Mercuric alkyl phenol derivatives. No. 2,217,155. Walter G. Christiansen to E. R. Squibb & Sons.
Manufacture of methyl borate from methanol and boric acid. No. 2,217,354. Frank J. Appel to E. I. du Pont de Nemours & Co.
Conversion of ricinoleates into other organic compounds. No. 2,217,515. Alfred G. Houpt to American Cyanamid Co.
Process converting a ricinoleate into other organic compounds including a salt of sebacic acid. No. 2,217,516. Alfred G. Houpt to American Cyanamid Co.
Terpene-cyanoacyl compound and method of producing same. Nos. 2,217,611-2,217,615. Joseph N. Borglin to Hercules Powder Co.
Method of preparing secondary amines. No. 2,217,630. Charles F. Winans to Wingfoot Corp.

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Nitriles and method of preparing the same. No. 2,217,632. William D. Wolfe to Wingfoot Corp.
Process for preparation of aliphatic organic acids and their esters. No. 2,217,650. Donald J. Loder.
Hydrogenation of ethers of hydroxy aldehydes. No. 2,217,651. Donald J. Loder to E. I. du Pont de Nemours & Co.
Secondary xenoxy-alkyl amines. No. 2,217,660. Francis N. Alquist and Harold R. Slagh to The Dow Chemical Co.
Method preparing a solid product containing nitrous oxide as major ingredient thereof. No. 2,217,678. Justus C. Goosmann to The S. S. White Dental Mfg. Co.
An organic substance subject to oxidative change in contact with small amount of betaine as anti-oxidant. No. 2,217,711. Sol Shappirio.
In manufacture of an ester by reaction between an olefine and a lower fatty acid, the step of carrying out said reaction in presence of compound of phosphorous dispersed in gas phase. No. 2,217,735. Henry Dreyfus.
Dehydrogenation catalyst. No. 2,217,865. Herbert P. A. Croll and James Burgin to Shell Development Co.
(Aryloxy-alkyl) (thiocyano-alkyl) ether. No. 2,218,019. Gerald H. Coleman and Robert W. Sapp to The Dow Chemical Co.
Diphenylsulfone-4,4'-Di-isocyanate and process of making it. No. 2,218,030. Paul Pohls and Fritz Mietzsche to Winthrop Chemical Co., Inc.
Preparation of glutaconic acid. No. 2,218,032. Norman D. Scott to E. I. du Pont de Nemours & Co.
Method for the preparation of ketene. No. 2,218,066. Albert B. Boese, Jr., to Carbide and Carbon Chemicals Corp.
Manufacture of benzene hexachloride. No. 2,218,148. Thomas Hardie to Imperial Chemical Industries, Ltd.
Process making substantially bacteria-free thermophilic starch. No. 2,218,221. Herman H. Schopmeyer and George E. Felton to American Maize Products Co.
Halogenated derivatives of acetopropyl alcohol. No. 2,218,349. Edwin R. Buchman to Research Corp.
Halogenated derivatives of acetopropane. No. 2,218,350. Edwin R. Buchman to Research Corp.
Sulfanilyl guanidine and process for making it. No. 2,218,490. Philip S. Winnek to American Cyanamid Company.
An ether of pentitol containing 2 free primary alcohol groups. No. 2,218,568. Elwood V. White to The Dow Chemical Co.
Glycosides of pentose ethers. No. 2,218,569. Elwood V. White to The Dow Chemical Co.
Process for producing aliphatic ketone anils. No. 2,218,587. Gustav Heinrich Reddelien, deceased, by Marie Louise Homeyer to General Aniline & Film Corp.
Production of aliphatic hydrocarbons of the diolefin series. No. 2,218,640. Wilhelm Friedrichsen and Wilhelm Fitsky to General Aniline & Film Corp.
Process for the production of chlorosulfonates. No. 2,218,729. Ernest J. Tauch and Ralph K. Iler to E. I. du Pont de Nemours & Co.
Complex phenolic ester bases and salts thereof. No. 2,218,739. Herman A. Bruson to The Resinous Products & Chemical Co.
Ephedrine iodide and compound. No. 2,218,900. Bernard L. Wyatt to The Wyatt Research Foundation.
Urethane-like compounds. No. 2,218,939. Adolf Steindorff and Gerhard Balle, Karl Horst and Johann Rosenback to General Aniline and Film Corp.
Addition products of 3,4 dehydrocyclotetramethylene sulfone. No. 2,219,006. Detlef Delfs, I. G. Werk to General Aniline and Film Corp.
Manufacture of indophenol-like compounds of the naphthocarbazole series. No. 2,219,010. Walter Hagge and Herbert Bach to General Aniline & Film Corp.
Preparation of catalysts containing magnesium oxide and cobalt. No. 2,219,042. Heinrich Heckel and Otto Roelen to Hydrocarbon Synthesis Corp.
Process of manufacturing alkali and ammonium chlorosulfonates. No. 2,219,103. Ralph K. Iler to E. I. du Pont de Nemours & Co.
Process for the manufacture of preparations containing the circulatory hormone callicrein. No. 2,219,167. Fritz Schultz to Winthrop Chemical Co., Inc.
Method recovering crystals of ammonium thiosulfate from aqueous solutions thereof. No. 2,219,258. William H. Hill to American Cyanamid Co.
Method for making cromo-chlor-alkanes. No. 2,219,260. Amos G. Horney to Air Reduction Co., Inc.
Process of activating the carbon monoxide adsorption property of platinum black powder. No. 2,219,261. Adolph Z. Mample to The Western Union Telegraph Co.

Industrial Chemicals

Method removing traces of soapstock and water from a refined glyceride oil. No. 2,216,104. Benjamin Clayton to Refining, Inc.
Process for the production of polynuclear carbon compounds. Nos. 2,216,130-2,216,131. Mathias Pier and Karl Schoenemann to I. G. Farbenindustrie Aktiengesellschaft.
Method of preparing aluminum sulfate. No. 2,216,194. Ralph S. Hood, to Monsanto Chem. Co., St. Louis.
Plaster of Paris intermixed with small proportion of sodium hexametaphosphate to control setting period of plaster. No. 2,216,207. Paul L. Menaul.
Process of oxidizing paraffinic hydrocarbons. No. 2,216,222. Hans Beller and John J. Owen to Jasco, Inc.
Process recovering high-molecular fatty acids from oxidation products of high molecular non-aromatic hydrocarbons. No. 2,216,238. Mac Harder to Jasco, Inc.
Process obtaining amorphous reaction products using aluminum with mixtures containing sodium silicate. No. 2,216,251. Sverre Quisling.
Method of producing pure magnesium compounds from magnisiferous minerals . No. 2,216,402. Robert Muller to Gesellschaft Zur Verwertung Chemisch Technischer Verfahren.
Denatured alcohol containing a salt of a lower alkyl isothiourea. No. 2,216,431. Hans T. Clarke to Eastman Kodak Co.
Process for converting acetylene into higher molecular products. No. 2,216,437. Paul Halbig, Emil Reiter and Friedrich Stadler to Consortium fur Elektrochemische Industrie, G.m.b.H.
Process of expressing oil from oil bearing materials. No. 2,216,658. Raymond T. Anderson to The V. D. Anderson Company.
Process removing residual impurities from alkali refined vegetable and mineral oil. No. 2,216,680. Benjamin H. Thurman to Refining, Inc.
Method decolorizing sugar solutions with active chlorine comprises treating with soluble phosphate and quantity of hypochlorite. No. 2,216,753. Pedro Sanchez and Eugene N. Ehrhart to Sucro-Blanc, Inc.
Process removing finely divided carbon from sugar solution without filtering by aerating solution containing floc forming materials and carbon particle, causing scum to form on top of solution and then separating clarified solution from scum. No. 2,216,754. Pedro Sanchez and Eugene N. Ehrhart to Sucro-Blanc, Inc.
Process preparing activated carbon comprising heating mixture of finely divided wood and phosphoric acid washing with water to remove phosphoric acid and then drying to moisture content of 35-60%. No. 2,216,756. George H. Scheffler to Darco Corporation.
Process producing activated carbon from black liquor comprising calcining mixture of black liquor and an alkali metal hydroxide. No. 2,216,757. George H. Scheffler to Darco Corp.
Process for softening water. No. 2,216,844. Georg W. Kuhl.
Processes treating distillery slop to recover vegetable oil. Nos. 2,216,904-2,216,905. Charles R. Brown and Ashton T. Scott, to The Sharples Corporation.
Ethers from reactive acid liquor. No. 2,216,931. Francis M. Archibald and Helmuth G. Schneider to Standard Alcohol Company.
Froth Flotation Reagent. No. 2,216,992. Mikael Vogel-Gorgensen to Separation Process Co.
Method of producing pure alumina. No. 2,217,099. Axel S. Burman.
Purification of petroleum contaminated waters. No. 2,217,143. Ralph A. Stevenson to The Dow Chemical Co.
Process for producing fatty acids and resinous materials from fatty glycerides. No. 2,217,363. Artur Greth and Fritz Lemmer to The Resinous Products & Chemical Co.
Cyclic method recovering acetylene from gases containing same. No. 2,217,429. Frederick R. Balcar to Air Reduction Co., Inc.
Process for refining sugar. No. 2,217,598. Eugene Roberts and George E. Stevens to The Western States Machine Co.
Manufacture of beet sugar. No. 2,217,603. George E. Stevens to The Western States Machine Co.
Manufacture of cane sugar. No. 2,217,604. George E. Stevens to The Western States Machine Co.
Nitrogenous compounds. No. 2,217,683. Morris Katzman to The Emulsol Corp.
Flotation process for concentrating carbonate minerals. No. 2,217,685. James E. Kirby and Joseph L. Gillson to E. I. du Pont de Nemours & Co.
Liquid recovery and gas recycle method. No. 2,217,749. Earl V. Hewitt to Pan American Production Co.
Preparation of phenol. No. 2,217,836. Alfred Dierichs to General Aniline and Film Corp.
Process for the recovery of oxygen from gaseous mixtures. No. 2,217,850. Kenneth C. Warne and James W. Woolcock to Imperial Chemical Industries, Ltd.
Unsaturated hydrocarbon compositions. No. 2,217,919. Fritz Rostler and Vilma Mehner.
Manufacture of halogenated hydrocarbons. No. 2,218,018. Oliver W. Cass to E. I. du Pont de Nemours & Co.
Process preparing ester condensation products. No. 2,218,026. Virgil L. Hansley to E. I. du Pont de Nemours & Co.
Non-caking mixture of sodium perborate and magnesium oxide. No. 2,218,031. Joseph S. Reichert and Allen M. Taber to E. I. du Pont de Nemours & Co.
Process clarifying and decolorizing raw waters. No. 2,218,053. Kurt Schwabe and Karl Buche to Th. Goldschmidt, A.-G. (Chemische Fabriken of Essen).
Manufacture of ammonium sulfate. No. 2,218,117. Leroy F. Marek to Arthur D. Little, Inc.
Preparation of sulfonic acids. No. 2,218,174. Arthur Lazar and Paul M. Ruedrich to Tide Water Associated Oil Co.
Industrial alcohol denatured with .5-5 parts monobenzylamine per 100 parts 95% ethyl alcohol. No. 2,218,233. Louis J. Figg, Jr., to Eastman Kodak Co.
Process operating carburetted water gas set. No. 2,218,266. Harry B. Pearson, Jr., to Semet-Solvay Engineering Corp.
In art of making glass, processes comprising, adding to glass batch a bluxing material containing fluorspar-barite ore. No. 2,218,334. Philip E. Harth.
Method dehydrogenating primary and secondary alcohols. No. 2,218,457. Charles F. Winans to Wingfoot Corp.
Method cracking sulfur-containing hydrocarbons for production a high yield of gases rich in unsaturated hydrocarbons. No. 2,218,495. Frederick R. Balcar to Air Reduction Co., Inc.
Phenols from cashew nut shell liquid and method of obtaining the same. No. 2,218,531. Mortimer T. Harvey to The Harvel Corp.
Process for drying magnesium sulfate. No. 2,218,551. Leo D. Richards to The Dow Chemical Company.
Manufacture of basis for face powder. No. 2,218,586. Matthias Quaedvlieg to Winthrop Chemical Company, Inc.
Polyvinyl Halide Composition. No. 2,218,645. Archie B. Japs to The B. F. Goodrich Co.
Process of producing products of high wetting power from aliphatic ketones. No. 2,218,660. Wilfried Schowalter, Hans Haussmann, Max Neber, Helmut Keppler and Rudolf Schroeter to General Aniline & Film Corp.
Process recovering sterols from crude mixture of soaps, sterols and water. No. 2,218,971. Percy L. Julian and Edwin W. Meyer and Norman C. Krause to The Glidden Co.
Process making chlorohydrins from mixture of gaseous hydrocarbons containing olefines and paraffins. No. 2,218,981. Charles A. Cohen and Clayton M. Beamer to Standard Alcohol Co.
Process producing oil soluble aliphatic hydroxy sulfides. No. 2,218,997. Jones I. Wasson to Standard Oil Development Company.
Continuous process refining vegetable oils containing free fatty acid. No. 2,219,088. Benjamin Clayton.

Leathers and Tanning

Treating leather and process of preparing. No. 2,217,762. John H. McGill and Walter H. Wedger to B. B. Chemical Co.
Method tanning hides and skins comprising treating skin with solution containing as essential tanning agent a compound prepared by reaction of polymeric phosphoric acids with organic compounds containing hydroxy groups. No. 2,218,582. Kurt Lindner to Hall Laboratories, Inc.
As new tanning agent a mixture of sulfonated water-soluble acid condensation product of phenol and formaldehyde with a sulfonated cresol-formaldehyde product. No. 2,218,996. Arthur Voss and Walter Pense to General Aniline and Film Corp.
Process fat-liquoring skins which comprises treating skins with water emulsion of a fat-liquoring composition containing a minor amount of pine oil. No. 2,219,108. Bunyan H. Little to Hercules Powder Co.

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Metals and Alloys

Method of producing metal powders. No. 2,216,167. John S. Fisher to The General Metals Powder Co.
Process hardening copper alloy by bringing to red heat and abruptly cooling by submergence in solution whereof the solute comprises substantially equal parts of sodium carbonate, potassium chloride and potassium permanganate. No. 2,216,379. Persak Tookousian of 15 per cent. to Harry E. Kouzian.
A gold alloy; 25-50% Au, 15-55% Cu, 3-30% Zn, 1-10% of metal from group consisting of Pd and Pt and an addition up to 25% Ag. No. 2,216,495. Otto Loebich to Chemical Marketing Co., Inc.
Process electrodepositing a white copper-cobalt-tin alloy plate. No. 2,216,605. Samuel Sklarew and Lionel Cinamon to Special Chemicals Corp.
Method of making metal powders and product. No. 2,216,770. Joseph E. Drapeau, Jr., and Louis G. Klinker to The Glidden Co.
Material for treating metallic surfaces comprising soldering flux, an ammoniate, and a material selected from a fusible metal or a fusible alloy. No. 2,216,928. Sherman B. Wilson.
Process for the production of metallic iron powder. No. 2,217,569. Walter Stephan to Chemical Marketing Co., Inc.
Process and means for recovering vanadium and uranium from ores. No. 2,217,665. Harry D. Brown.
Protection of steel shafting against corrosion. No. 2,217,719. Karl D. Williams.
Inhibitor for process of pickling metals. No. 2,217,874. Henry F. Merriam and George W. Cupit, Jr., to General Chemical Co.
Method applying metal lubricant to surface of ferrous metal objects in preparation for drawing or deformation operations. No. 2,217,921. Albert J. Saukaitis to American Chemical Paint Co.
Process for refining lead. No. 2,217,981. Raymond L. Hallows to The Eagle-Picher Lead Co.
Alloy, particularly adapted for electrical purposes consisting of 3% Cr., 1.5% Fe, 1% Cd and 94.5% Cu. No. 2,218,073. Hans H. Schwarzkopf and Richard Kieffer to American Electro Metal Corp.
Process recovering silver from silver containing wastes obtained from photographic materials. No. 2,218,250. Marvin J. Reid to Eastman Kodak Co.
An improvement in extruding solid and hollow articles from duralumi-num and other light metal alloys. No. 2,218,459. Fritz Singer.
Method treating metal comprises pickling, immersing in hot water and caustic alkali, quickly drying and then immersing it in bath of hot water and oil while metal is still hot. No. 2,218,557. Agnes J. Reeves Greer.
Process for electrodeposition of zinc. No. 2,218,734. Leon R. Westbroon to E. I. du Pont de Nemours & Co.
In preparation of amalgams, steps of incorporating auxiliary metal in composition comprising mercury and a metallic component capable of amalgamation. No. 2,218,755. Hans P. Kaufmann.
A high resistance steel. No. 2,218,888. Alessandro Marchetti.
Producing of free-machine stainless steel having a low sulfur content. No. 2,218,973. Vincent T. Malcolm to The Chapman Valve Mfg. Co.
Formation of chromium-containing layers on the surface of ferrous articles. Nos. 2,219,004 and 2,219,005. Karl Daeves and Gottfried Becker and Fritz Steinberg.
Process of treating in a blast furnace a mixture of ferriferious ores with a carbonaceous agent for recovery of iron and iron alloys. No. 2,219,046. Karl Koller and Zsigmond Galocsy.
Magnesium base alloy containing yttrium. No. 2,219,156. Franz Sauerwald and Hans Eisenreich to Magnesium Development Corp.
Process for the production of metallic magnesium. No. 2,219,059. Robert Suchy and Hellmuth Seliger to Magnesium Development Corp.

Paper and Pulp

Method producing coated paper having uniformly smooth surface coated to render same more opaque and suitable for printing. No. 2,216,143. William F. Thiele and Howard B. Richmond, 9/10 to Consolidated Water Power and Paper Co., and 1/10 to Peter J. Massey.
Pulping process. No. 2,218,479. Floyd C. Peterson and Louis E. Wise.
Process producing substantially fiberless homogeneous masses from woody material. No. 2,218,897. Viktor Skutl.

Petroleum

Reissue. Process production of aromatic hydrocarbons for aliphatic hydrocarbons of 6 to 12 atoms. No. 21,588. Aristid V. Grosse to Universal Oil Prods. Co.
Catalytic isomerization of normal paraffinic hydrocarbons. No. 2,216,-221. Jeffrey H. Bartlett to Standard Oil Development Co.
Improved fuel oil comprising heavy oil containing constituents that tend to vary its pour point and a small quantity of benzidene to stabilize the pour point. No. 2,216,230. Garland H. B. Davis to Standard Oil Development Co.
Method producing lubricating oil comprising steps of mixing substantial proportions of isobutylene monomer and dimer, maintaining temp. of –50 to 100° C. and polymerizing mixture by application thereto of boron trifluoride to produce lubricating oil. No. 2,216,253. Helmuth G. Schneider and Lewis A. Bannon to Standard Oil Development Co.
Process reacting relatively high molecular weight paraffin hydrocarbons with lower molecular weight iso-paraffin hydrocarbons to form paraffin hydrocarbons of intermediate molecular weight. No. 2,216,274. Aristid V. Grosse to Universal Oil Products Co.
Process producing branched chain olefins from olefins containing straight carbon chain. No. 2,216,284. Charles L. Thomas and Herman S. Bloch to Universal Oil Products Co.
Stable hydrocarbon oil derived from mixed gases produced from pyrogenetic cracking of petroleum oils, liquid at normal temperatures composed of branched chain paraffins in major proportions and having empirical formula of $CnH_{2}n$ to $CnH_{2}n\dagger_{2}$. No. 2,216,372. Arthur L. Lyman and Elmslie W. Gardiner to Standard Oil Co. of California.
Process cracking mineral oils. No. 2,216,471. Alfred P. Frame and William H. Price to Power Patents Co.
Solvent Rectification of Petroleum. No. 2,216,602. Ed. G. Gagatz to Union Oil Co. of California.
Process converting higher boiling hydrocarbons to lower boiling products. No. 2,216,683. George Armistead, Jr., to Gasoline Products Company, Inc.
Furnace for heating hydrocarbon fluids. No. 2,216,684. Harold V. Atwell to Gasoline Products Company, Inc.
In treatment of hydrocarbon oil an improvement comprising subjecting incondensed vapors from fractionation to contact with solid absorbent catalytic material in plurality of successive treating stage to effect polymerization of unstable unsaturated constituents thereof to higher boiling polymers. No. 2,216,691. Malvin R. Mandelbaum to The Gray Processes Corporation.
Process improving lubricating oils to decrease sludge formation and to decrease tendency to cause corrosion of metal surfaces. No. 2,216,711. Sidney Musher to Musher Foundation, Inc.
Stabilized Lubricating Oil Composition. No. 2,216,752. Raphael Rosen to Standard Oil Development Co.
Process of stabilizing hydrocarbon oil which has been sweetened with a reagent containing copper. No. 2,216,856. Graham H. Short to Phillips Petroleum Co.
Solvent Extraction Operation. No. 2,216,932. George T. Atkins, Jr., to Standard Oil Development Co.
Method stabilizing oil base drilling fluid containing oil-wet clay, comprises adding H_2SO_4 to the mixture. No. 2,216,955. Thomas V. Moore to Standard Oil Development Co.
Method for refining lubricating oil distillates. No. 2,216,968. Hans G. Vesterdal to Standard Oil Development Co.
Process of converting acetylenic hydrocarbons to aromatic hydrocarbons. No. 2,217,010. Astrid V. Grosse and Wm. J. Mattix to Universal Oil Prods. Co.
Process of converting acetylenic hydrocarbons to aromatic hydrocarbons. Nos. 2,217,011-2,217,012-2,217,013. Astrid V. Grosse and Wm. J. Mattox to Universal Oil Prods. Co.
Process producing hydrocarbons boiling in gasoline range comprises reacting iso-butane with a normally gaseous olefin in presence of boron fluoride, nickel and hydrogen fluoride. No. 2,217,019. Vladimir N. Ipatieff and Astrid V. Grosse to Universal Oil Products Co.
Stabilized high film strength lubricating oil. No. 2,217,173. Bert H. Lincoln and Waldo L. Steiner to Continental Oil Co.
Method of testing drilling fluid to determine its ability to prevent loss of liquid to the penetrated formation. No. 2,217,175. Jerry T. Ledbetter to Union Oil Co. of Calif.
Production of oil gas. No. 2,217,250. Elmon L. Hall to Portland Gas & Coke Co.
Process for isomerization of olefin hydrocarbons. No. 2,217,252. Han Hoog to Shell Development Co.
Process for conducting exothermic reactions. No. 2,217,263. Hein I. Waterman, Jacob J. Leendertse and Willem J. Cornelis de Kok to Shell Development Co.
Method removing low-temperature sludge from dielectric mineral oil compositions comprising adding thereto a substance selected from group consisting of diphenyl and diphenyloxide. No. 2,217,368. William G. Horsch to Socony-Vacuum Oil Co.
Mineral oil distillation. No. 2,217,385. John E. Schulz and Ronald V. Becknell to High Vacuum Processes, Inc.
Process for conversion of hydrocarbons. No. 2,217,587. David G. Brandt to Power Patents Co.
Method producing simultaneously gasoline of high antiknock value and an ethylene-rich gas. No. 2,217,588. Howard Dimmig to Gasoline Products Co., Inc.
Hydrocarbon conversion process and apparatus therefor. No. 2,217,636. Robert L. Rude to The British American Oil Co., Ltd.
Method of preparing high melting point asphalt and high quality bright stock from mixed base residuum. No. 2,217,727. Arthur B. Brown and Frank C. Croxton and Bernard Ginsberg to Standard Oil Co., Corp. of Ind.
Nonaqueous drilling fluid. Nos. 2,217,926-2,217,927. Pieter Van Campen to Shell Development Co.
Process cracking hydrocarbons. No. 2,218,024. Du Bois Eastman and Charles Richker to The Texas Co.
Sulfur containing lubricant. No. 2,218,132. Bert H. Lincoln, Waldo L. Steiner and Gordon D. Byrkit to Continental Oil Co.
Liquid fuel for compression ignition engines containing small quantities of methyl ethyl ketone peroxide added thereto. No. 2,218,135. Franz R. Moser to Shell Development Co.
Motor fuel containing 5-60% methyl isobutyl carbinol. No. 2,218,137. Frederic M. Pyzel to Shell Development Co.
Process of separating thiophenol from alkyl phonols. No. 2,218,139. Samuel B. Thomas and Ben. H. Cummings to Shell Development Co.
Stabilized mineral oil composition. No. 2,218,283. Everett W. Fuller to Socony-Vacuum Oil Co., Inc.
A diesel fuel. No. 2,218,447. Darwin E. Badertscher and Mario S. Altamura to Socony-Vacuum Oil Co., Inc.
Method removing wax from petroleum oils. No. 2,218,511. Harold V. Atwell to Standard Oil Co., Corp. of Indiana.
Methods and apparatus for separating wax from oil. Nos. 2,218,514 to 2,218,518. Ulric B. Bray to Union Oil Company of California.
Process separating hydrocarbon oil-wax mixture into solid and liquid constituents. No. 2,218,519. Joseph A. Campbell, Jr., to Union Oil Co. of California.
Process for dewaxing oils. No. 2,218,520. Ulric B. Bray and Joseph A. Campbell, Jr., to Union Oil Company of California.
Conversion process for hydrocarbons. No. 2,218,578. Lyman C. Huff to Universal Oil Products Company.
Process for regeneration of spent alkaline solution secured in removal of mercaptan compounds from mineral oil. No. 2,218,610. Amiot P. Hewlett to Standard Oil Development Company.
Improved lubricant comprising mineral oil and polyvalent metal soap of substantially non-distillable organic acids obtained as by-product of oxidation of petroleum hydrocarbons. No. 2,218,618. John G. McNab and Walter T. Watkins to Standard Oil Development Company.
Process stabilizing residual hydrocarbon oil containing sludge-forming substances. No. 2,218,649. Rudolph C. Laatsch to Universal Oil Products Co.
Lubricating oil and lubrication therewith. No. 2,218,917. Arthur Walther Lewis to Tide Water Associated Oil Company.
Process of desulfurizing petroleum oils. No. 2,219,109. Thomas F. McCormick to Tide Water Associated Oil Company.
Lubricant comprising mineral oil and small quantity of compound having formula $R(SO_2X)m$ where R is aliphatic, m is 1 or 2 and X is a halogen. No. 2,219,164. Franz R. Moser and Marinus C. Tuyn to Shell Development Co.

Pigments

In preparation wet milled titanium oxide pigments steps of deflocculating aqueous suspension of calcined pigment by adding thereto a member from group consisting of alkaline reacting alkali metal and ammonium compounds and thereafter coagulating the pigment by addition of CO_2 to this suspension. No. 2,216,879. Louis C. Eckels to E. I. du Pont de Nemours & Co.

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In process making improved extender material step of wet milling mixture of calcium carbonate and a polyglycolide. No. 2,216,889. Ray L. McCleary to E. I. du Pont de Nemours & Co.
Manufacture of compositions of lead and its oxides. No. 2,217,235. Oliver O. Rieser to The Richardson Co.
Casein component of water paints. No. 2,217,513. William H. Fales and William F. Fales.
Titanium pigment production. No. 2,218,704. Archibald M. Erskine to E. I. du Pont de Nemours & Co.
Process making basic carbonate white lead. No. 2,218,940. Gustave W. Thompson and Alexander Stewart to National Lead Co.
Titanium oxide pigment and process for producing same. No. 2,219,129. John A. Geddes to E. I. du Pont de Nemours & Co.

Resins, Plastics

Composition of matter, comprising soluble polymeric sub-resinous product having molecular weight of less than 100,000. No. 2,216,310. Charles M. Blair, Jr., to Petrolite Corp., Ltd.
Polyvinyl acetal resin sheets containing the ethyl ether of diethylene glycol succinate. No. 2,216,461. Henry B. Smith and Donald R. Swan to Eastman Kodak Co.
Resin and process for its preparation. No. 2,216,941. Anthony H. Gleason to Standard Oil Development Co.
Thermosetting molding composition comprising a formaldehyde-urea reaction product and plasticizer. No. 2,217,006. David E. Cordier to Plaskon Co.
Dispersion of paracoumarone resin and process of producing same. No. 2,217,119. Earl G. Kerr to The Barrett Co.
Plastic composition comprising polyvinyl formal resin and as plasticizer therefor, an alkyl phthalate of formula $C_6H_4(COOR)_2$ where R is saturated alkyl chain of 6-8 C atoms. No. 2,217,163. David A. Fletcher to E. I. du Pont de Nemours & Co.
Urea-formaldehyde resins. No. 2,217,372. Oskar R. Ludwig to The Resinous Products & Chemical Co.
Process of treating thermoplastic materials. No. 2,217,451. Winton I. Patnode to General Electric Co.
Bisthioammeline polyalkylene ether resin. No. 2,217,667. Herman A. Bruson and James L. Rainey to The Resinous Products & Chemical Co.
Resinous binder comprising an organic resin and a plasticizer. No. 2,217,988. Harry W. Lawson and John L. Gillerlain to Albert E. Starkie and Otto Eisenschiml.
Resinous condensation products and process of making same. No. 2,218,077. Werner Zerweck and Karl Keller to General Aniline & Film Corp.
Composition comprising polyvinyl acetal resin and butyl ether of diethylene glycol benzoate as plasticizer therefor. No. 2,218,237. Jack J. Gordon to Eastman Kodak Co.
Polyvinyl acetal resin sheets containing methoxyethyl maleate. No. 2,218,238. Jack J. Gordon to Eastman Kodak Co.
Polyvinyl acetal resin sheets containing di-isoamyl maleate. No. 2,218,239. Jack J. Gordon to Eastman Kodak Co.
Polyvinyl acetal resin compositions containing diglycerol tetrapropionate. No. 2,218,251. Henry B. Smith to Eastman Kodak Co.
Resinous condensation product formed by fusing together free abietic acid and pyridine. No. 2,218,284. Almon G. Hovey and Theodore S. Hodgins to Reichhold Chemicals, Inc.
Manufacture of condensation products from phenols. No. 2,218,344. Reginald J. W. Reynolds and Eric E. Walker to Imperial Chemical Industries, Ltd.
Process of cleaning resins. No. 2,218,365. James W. Taylor to Peninsular-Lurton Co.
Process preparing resinous polymer comprises heat for 2 hours @ 225° C., a composition having dimethylallyl adipate as sole polymerizable component and containing 1% of the dimethallyl adipate of benzoyl peroxide. No. 2,218,439. Henry S. Rothrock to E. I. du Pont de Nemours & Co.
Glycerol resin rendered readily soluble in fatty oils by incorporation therein of acids obtainable on hydrolysis of a fatty triglyceride. No. 2,218,553. Israel Rosenblum.

Rubber

Method manufacturing cylinder of gas expanded rubber. No. 2,216,136. Dudley Roberts to Rubatex Prods., Inc.
Method preserving rubber comprises treating with mixture of diaryl p-phenylene diamine and equal proportion. No. 2,216,524. Robert L. Sibley to Monsanto Chem. Co.
Method manufacturing gas-expanded latex products. No. 2,216,785. Dudley D. Roberts to Rubatex Products, Inc.
Process making sponge rubber. No. 2,216,834. Joseph H. Buskirk to Brown Rubber Co., Inc.
Plasticized synthetic linear polyamide. No. 2,216,835. Wallace H. Carothers by the Wilmington Trust Co., to E. I. du Pont de Nemours & Co.
Manufacture of artificial rubber by the polymerization of butadienes. No. 2,216,958. Wilhelm Pannwitz and Bernhard Ritzenthaler to Jasco, Inc.
Process for the synthesis of artificial rubber or rubberlike compounds. No. 2,217,057. Herman B. Kipper.
Method for the production of cellular rubber masses. No. 2,217,605. Mitchell Carter to Dunlop Tire and Rubber Corp.
Cellular rubber and method of making the same. No. 2,217,606. Harold W. Greenup to The Firestone Tire and Rubber Co.
Method vulcanizing rubber in presence of cyclohexadiene aliphatic amine in which cyclohexadiene radical is saturated with substituents from group consisting of hydrogen, alkyl, aralkyl, aryl, alicyclic, alkoxy, aryloxy, amino and hydroxyl radicals. No. 2,217,622. Joy G. Lichty to Wingfoot Corp.
Method of producing soft synthetic rubberlike materials. No. 2,217,631. William D. Wolfe to Wingfoot Corp.
A rubber composition. No. 2,218,167. Henry H. Harkins to United States Rubber Co.
Method producing rubber matrix for printing plates. No. 2,218,351. Orby B. Crowell to Viceroy Mfg. Co., Ltd.
Rubberlike interpolymers of butadiene and methyl methacrylate and process for making same. No. 2,218,362. Howard W. Starkweather and Arnold M. Collins to E. I. du Pont de Nemours & Co.

Textiles

Process enhancing water-repellence and softness of feel of textile fabric containing polyhexamethylene adipamide. No. 2,216,406. Paul R. Austin to E. I. du Pont de Nemours & Co., Inc.
Process producing dischargeable dyeings on cellulose acetate silk with a polyazo compound. No. 2,216,446. James G. McNally and Joseph B. Dickey to Eastman Kodak Co.
Process recovering formal-ethers from organic derivative of cellulose textile material. No. 2,216,799. John L. Baggett to Celanese Corp. of America.
Manufacture of artificial yarns. No. 2,216,810. Henry Dreyfus and William I. Taylor to Celanese Corp. of America.
Synthetic Wool. No. 2,217,113. Vernal R. Hardy to E. I. du Pont de Nemours & Co.
Printing cellulosic textile materials. No. 2,217,805. Denys P. Milburn to Imperial Chemical Industries, Ltd.
Rayon for reinforcing rubber products. No. 2,217,826. Jan A. Van Laer to American Enka Corp.
Process for stabilizing cellulosic fibrous textile materials against deterioration, comprises treating same with acidyl-amino diarylamine. No. 2,218,185. William P. ter Horst to United States Rubber Co.
Process of sizing textiles, the size, the preparation of the same, and the sized article. No. 2,218,506. Lloyd W. Davis and Ernest Segessemann to National Oil Products Co.
Process for coloration of threads of filaments of cellulose acetate. No. 2,218,628. Percy F. C. Sowter to Celanese Corp. of America.
Process for production of composite yarns resembling wool yarns. No. 2,218,633. Angus Smith Bell and Joseph R. Wylde to Celanese Corp. of America.
After treatment of dyed textile fibers. No. 2,218,924. Siegfried Peterson and Otto Bayer and Carl Taube to General Aniline and Film Corp.

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Abstracts of Foreign Patents

Collected from Original Sources and Edited

By E. L. Luaces, Chemical and Patent Consultant

To assist those making use of this summary, it might be well to comment briefly on the system used by each of these countries in reporting patents.

Canada grants the patent on the date of publication. Printed copies are not obtainable, but typewritten certified copies may be obtained at a cost averaging about five dollars each.

English "patents" here reported are known as *Complete Specifications Accepted*. They are printed for distribution at a cost of 1s. 1d. each. They are subject to opposition by interested parties for a period of two months from date of publication.

French patents are granted several months before publication. Allowed applications are open to public inspection on payment of a fee, but no copies may be purchased nor notes made from the original. Printed copies of specifications are available to public several months after issue at 10 francs each, plus postage.

Belgian patents are granted several months before publication. No printed copies are available, but photostat copies may be obtained at a cost of from 3.5 to 4.5 francs per page.

In this digest the latest available data will be published as obtained from original sources. It will be readily understood that present conditions bring about delays in transportation and that for that reason the coverage will vary from month to month. We expect shortly to be able to begin publication of abstracts of German patents.

Present conditions make it impossible to obtain printed copies or photostats of French and Belgian patents, but this should shortly be corrected. We shall be glad to assist those interested in obtaining copies of Canadian and English patents. Your comments and criticism will be appreciated.

CANADIAN PATENTS

Granted and Published August 27, 1940

A zinc chloride-sodium dichromate wood-preserving solution containing a compatible acidic substance preventing formation of insoluble residue. No. 390,953. E. I. du Pont de Nemours & Co., Inc. (Ernest R. Boller.)

Process for polymerizing a liquid composition in elongated shapes. No. 390,954. E. I. du Pont de Nemours & Co., Inc. (Reuben T. Fields.)

Polymerization of liquid composition comprising a monomeric polymerizable organic compound. Nos. 390,955. and 390,956. E. I. du Pont de Nemours & Co., Inc. (Charles M. Fields and Reuben T. Fields.)

Process for the preparation of aliphatic polyureas. No. 390,957. E. I. du Pont de Nemours & Co., Inc. (Harold W. Arnold.)

Process for dyeing or printing with ester salts of leuco vat-dyestuffs. No. 390,958. Durand & Huguenin S. A. (Georges de Niederhäusern, Erich Escher and Christian Hofmann.)

Incorporating with a polyvinyl halide a compound having the structural formula X-A-R wherein X represents a member of the group halogen and hydrogen, A represents a member of the group naphthalene and biphenyl nuclei, and R represents a member of the group consisting of alicyclic and aliphatic hydrocarbon groups. No. 390,961. The B. F. Goodrich Company. (Claude H. Alexander.)

Composition comprising rubber, neoprene, and an air-curing agent for only the neoprene. No. 390,962. The B. F. Goodrich Company. (Richard A. Crawford.)

Smokeless powder grains coated with an admixture of a hydrogenated rosin ester and a solvent for nitrocellulose. No. 390,965. Hercules Powder Company. (Ellsworth S. Goodyear.)

Chlorinated and vulcanized rubber containing not over 20% of chlorine. No. 390,967. Imperial Chemical Industries Limited. (John P. Baxter and Leonard T. Dod.)

In manufacture of ammonium sulfate crystals, controlling crystal form by incorporating a substance having the property of combining with trivalent cations to form Werner complex. No. 390,968. Imperial Chemical Industries Limited. (Malcolm P. Applebey.)

In manufacture of ammonium sulfate crystals, crystallizing out in presence of free acid, trivalent cation, and oxalic acid anions. No. 390,969. Imperial Chemical Industries Limited. (John W. R. Rayner.)

An explosive comprising mixture of ammonium nitrate, an explosive nitric ester, a powdered readily oxidizable metal, and ground baked cork. No. 390,980. Molex Explosives, Limited. (Laud S. Byers.)

Removing pitch from wood pulp by dissolving in immiscible organic solvent, emulsifying the pitch-solvent mixture, and removing the emulsion from the pulp. No. 390,984. National Oil Products Company. (James H. Fritz.)

Producing vat dyestuff prints using pastes containing quinhydrone-like derivatives of vat dyestuffs. No. 390,993. Society of Chemical Industry in Basle. (Eduard Kambli, Ernst Stoecklin and Richard Tobler.)

Using emulsion of latex in a cement of a condensation derivative of rubber for bonding rubber to artificial silk in tire manufacture. No. 391,000| Wingfoot Corporation. (Theodore A. Riehl.)

Rubber age resister comprising reaction product of ethylene glycol and an amine. No. 391,001. Wingfoot Corporation. (Albert F. Hardmann.)

Selective flotation of zinc and lead. No. 390,003. Marius C. Bagby.

Granted and Published September 3, 1940.

Differential flotation of complex sulfide ores containing chalcopyrite, pyrite and pyrrhotite adding ammonium sulfate as an inhibiting agent. No. 391,009. Charles G. McLachlan and Horace L. Ames.

Compound conditioning agent for flotation treatment of oxide ore, consisting of oleic acid 45.1%, kerosene 40.6%, soda ash 5.5% and sodium silicate 8.8%, all by weight. No. 391,024. Royal S. Handy.

Coloring matter for granular masses consisting of toluidine red, an extender of calcium sulfate and a binder of boiled linseed oil, resin varnish and pilchard oil. No. 391,028. Ernest G. Hewish.

Cyclic process for the electrolytic production of magnesium. No. 391,037. Samuel L. Madorsky.

Wood pulp for papermaking produced by treating wood of suitable moisture content with sulfur dioxide at temperatures below 100° C. in absence of bases and in presence of only such moisture as completely held within the wood structure. No. 391,050. Frederick H. Yorston.

Heat treatment of aluminum base alloys to increase resistance to corrosion. No. 391,053. Aluminum Company of America (Edgar H. Dix, Jr., and Joseph A. Nock, Jr.).

Method of making ceramic products using clays causing gelation of a soluble silicate. No. 391,060. Batelle Memorial Institute (Floyd B. Hobart).

Preparation of calcined titanic pigments. No. 391,063. Bird Machine Co. (Sanford C. Lyons).

Production of successive different grades of pulp by repetitious use of a single chemical pulping liquor. No. 391,064. Brown Company (George A. Richter).

Process comprising heating an alkali metal compound with a reducing agent to produce alkali metal vapor and rapidly cooling the vapor below 700° C. by mixing with cooling gas to condense to liquid alkali metal. No. 391,074. Canadian Industries, Limited (Burritt S. Lacey).

Manufacture of motor-fuel stabilizer, including separating water from an alkyl amine by admixing a polyhydric alcohol to react with the alkyl amine, admixing di-isopropyl ether with the mixture, and distilling to remove water and ether as an azeotrope. No. 391,075 (see also No. 391,076). Canadian Kodak Company, Ltd. (Harold von Bramer and Albert C. Ruggles).

Manufacture of primary and secondary amines free from tertiary amines by catalysis. No. 391,077. Canadian Kodak Company, Ltd. (Rudolph L. Hasche).

Rotogravure ink containing a prolamine or zein as a binder for the coloring matter. No. 391,078. Canadian Kodak Company, Ltd. (Ernest L. Baxter).

Gas scrubbing liquid comprising an amine solution and an inhibitor consisting of an alkali metal nitrite. No. 391,081. Carbide and Carbon Chemicals, Ltd. (John W. Persohn).

Heat stable resinous composition comprising a vinyl resin containing a vinyl halide and a stabilizer comprising a mixture of a metal stearate and an alkali metal salt of a monobasic, monocarboxylic acid having not more than two carbon atoms. No. 391,082. Carbide and Carbon Chemicals, Limited (Kermit K. Fligor).

Method for the manufacture of composite metallic elements. No. 391,085. The Cleveland Graphite Bronze Company (Carl E. Swartz).

Method and apparatus for changing the physical characteristics of fluid bodies by subjecting them to rapidly recurring disruptive shocks simultaneously delivered to a plurality of localized small volumes of said bodies. No. 391,086. Colloid Corporation (Samuel J. Wynn).

In manufacturing ethylene oxide by oxidation of ethylene, removing the oxide from other products by adsorption on active carbon, removing adsorbate from the carbon, drying the carbon for reuse; and when carbon becomes partly exhausted, revivifying by prolonged treatment with hot water and subsequent drying. No. 391,090. The Distillers Company, Limited (Herbert Langwell and Herbert Muggleton).

Tire bonding plastic including an olefine polysulfide. No. 391,091. Dominion Rubber Company, Limited (Ernst Eger).

Sterile liquid emulsion of vitamin D_2 concentrate consisting of activated ergosterol, a butter-fat vehicle therefor, and an evaporated milk carrier for both the vehicles and ergosterol. No. 391,097. General Mills, Inc. (Reginald C. Sherwood and Charles G. Ferrari).

Foreign Chemical Patents

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Manufacture of easily matter soluble calcium double salts of ascorbic acid by the action of equimolal quantities of calcium salts by poly-oxy-mono-carboxylic acids on calcium ascorbate in aqueous solution. No. 391,103. F. Hoffman-LaRoche & Co., Limited, Company (Kurt Warnat).

Ceramic product comprising silicon carbide grains bonded integrally with a vitrified ceramic bond containing residual aluminum and containing boric acid. No. 391,117 (see also No. 391,118). Norton Company (Lowell H. Milligan and Robert H. Lombard).

Aromatic oxyketone arsenical compounds and process of preparing them. No. 391,123. Parke, Davis & Company (Cliff S. Hamilton).

Production of a substantially anhydrous oxygen containing derivative of an olefine having at least four carbon atoms per molecule. No. 391,133. Shell Development Company (William Engs and Gerald H. v. de Griendt).

Processes, respectively, for producing and dehydrating acetylenic alcohol. Nos. 391,142 and 391,143. Union Carbide and Carbon Research Laboratories, Inc. (Thomas H. Vaughn).

Production of cellulose sheet material having portions of its area reinforced by a textile fabric. No. 391,152. Henry Dreyfus (William Walker).

Stabilizing a vinyl resin against light by adding a benzene derivative having a hydroxyl group directly connected to the benzene nucleus and having a substituted carboxyl group. No. 391,163. Carbide and Carbon Chemicals, Limited (Fred W. Duggan).

Granted and Published September 10, 1940.

Method of producing divinylated aromatic hydrocarbons by pyrolisis of the corresponding dialkylated condensation product of an aromatic hydrocarbon and a mono-olefine containing from 3 to 5 atoms. No. 391,169. Herbert M. Stanley, Gregoire Minkoff and James E. Youell.

Activation of provitamin by action of a gaseous brush discharge. No. 391,170. Benjamin Kramer, Samuel Natelson and Albert E. Sobel.

Photographic developer containing a quaternary ammonium compound or guanidine carbonate. No. 391,207. American Cyanamid Company (Louis C. Jones, Robert B. Barnes and Garnet P. Ham).

Electrolytic process of zinc coating ferrous articles. No. 391,222. Bethlehem Steel Company (Louis H. Winkler).

Producing a phenol acetoacetate by introducing diketene into the hot phenol at refluxing temperatures. No. 391,236. Carbide and Carbon Chemicals, Limited (Albert B. Boese, Jr.).

Preparing N-substituted lutidone by reacting an organic primary amine with diacetyl acetone in presence of suitable solvent. No. 391,237. Carbide and Carbon Chemicals, Limited (Albert B. Boese, Jr.).

Reaction product of polysaccharides synthesized by action of bacteria on sucrose media and butyl chloride. No. 391,240 (see also No. 391,241). Commonwealth Engineering Corporation (Grant L. Stahly and Warner W. Carson).

High solids content ice cream having added calcium or magnesium oxide in amounts sufficient to bring pH to 6.4-8.4. No. 391,242. De-Raef Corporation (Ernest D. Fear).

Preparing a mixture of lead alkyl compounds containing mixed alkyl lead compounds by producing interchange of alkyl radicals between different molecules of one or more lead alkyl compounds by catalysis. No. 391,247 (see also No. 391,248). Ethyl Gasoline Corporation (George Calingaert and Harold A. Beatty).

Dried milk containing an ester of a higher fatty acid and glycerol having a free glyceryl alcohol group in the glycerol part of the ester. No. 391,254. Industrial Patents Corporation (Clinton H. Parsons).

A soap bar sealed in a sheet of wrapping material having on one side a heat-seal coating and on the other a coating of vinyl resin. No. 391,262. The McDonald Printing Company (Joseph H. Jorling).

Abrasive sandpaper including vinyl resin adhesive. No. 391,264. Minnesota Mining & Manufacturing Company (Byron J. Oakes).

Producing aromatic hydrocarbons by contacting octane at 300-500° C. with chromium oxide catalyst prepared by thermally decomposing an ammonium chromate. No. 391,278. Shell Development Company (Han Hoog).

Recovery of calcium hypochlorite compounds from solutions containing substantial amounts of calcium chloride in addition to available chlorine. No. 391,301. I. G. Farbenindustrie A. G.

Process of reacting acetaldehyde in presence of sulfuric acid with polyvinyl acetate emulsified in water in presence of polyvinyl alcohol. No. 391,303. Werner Starck, Hofheim Taunus and Heinrich Freudenberger.

Granted and Published September 17, 1940.

Apparatus for leaching and precipitating ores. No. 391,307. John L. Burnett.

Multifilament rayon cloth for electrical insulation. No. 391,319. William W. McElrath.

Process for recovering values from zinc ore concentrates containing lead, cadmium and other impurities. No. 391,336. American Zinc, Lead & Smelting Company (George LeRoy Spencer, Jr.).

Abrasive sheet comprising layers of paper and cloth united by a flexible synthetic resin adhesive. No. 391,338. Behr-Manning Corporation (Nicholas E. Oglesby, Charles F. Reilly and Victor W. Gilbert).

Iron ore smelting process. No. 391,339 . H. A. Brassert & Company (Herman A. Brassert and Tom P. Colclough).

Surface treatment and fluxing composition for solder bonding on steel surfaces having protective coatings of zinc and like metals. No. 391,351. Continental Can Company, Inc. (Norman J. Beno).

Composition for treating molten cast iron, comprising essentially 25-75% graphite and ferrosilicon in unbonded intimate mixture. No. 391,361. Electro Metallurgical Company of Canada, Limited (William J. Priestly).

Composite article comprising at least two carbon members bonded with cement containing sulfur chloride and a resinified furan. No. 391,382. National Carbon Company, Inc. (Edwin F. Kiefer).

Manufacture of boron carbide alloy. No. 391,386. Norton Company (Raymond R. Ridgway).

Production of coke having high porosity and reactivity and weighing about 15 pounds per cubic foot. No. 391,402. Shawinigan Chemicals, Limited (Arthur Hoijord Anderson and Joseph Emile Renaud).

Production of nitrogen-containing alpha beta-unsaturated ketones. No. 391,403. Shell Development Company (Johannes Andreas van Melsen).

Method of treating whole hard curd milk with a pressure homogenizer. No. 391,412. Submarine Signal Company (Edward W. Smith).

Treatment of oil to remove components having melting point higher than the oil. No. 391,413. Swift and Company (Carl Dedlow).

Producing an isoalkynyl acetylene by dehydrating a tertiary acetylinic alcohol in presence of a dehydration catalyst selected from: sulfuric, phosphoric and tetraphosphoric acids; and recovering the isoalkenyl acetylene thus produced. No. 391,419. Union Carbide and Carbon Research Laboratories, Inc. (Thomas H. Vaughn).

ENGLISH COMPLETE SPECIFICATIONS

Accepted and Published July 10, 1940.

Manufacture of mannitol. No. 522,729. Howard & Sons, Ltd.

Production of starch products. No. 522,732. Corn Products Refg. Co.

Preventing corrosion of magnesium and magnesium base alloys. No. 522,681. Magnesium Elektron, Ltd.

Separation of red mud from solutions in the Bayer extraction process. No. 522,691. Dorr Co., Inc.

Manufacture of degradation products containing carboxyl groups from compounds of the oestrane series. No. 522,742. Schering A. G.

Synthesis of ammonia from gaseous constituents. No. 522,761. G. M. Wedard.

Manufacture of rubber-like polymerizates. No. 522,788. I. G. Farbenindustrie A. G.

Manufacture of concentrated aqueous solutions of medicinal substances difficultly soluble or insoluble in water. No. 522,834. Hoffmann-LaRoche & Co., A. G.

Manufacturing films and threads mainly comprising gums or mucilages. No. 522,815. A. Pinel.

Polymerization of olefine. No. 522,818. Usines de Melle.

Purifying soda lye in artificial silk plants. No. 522,820. Aktiebolaget Separator.

Manufacture of trichloracetonitrile. No. 522,835. I. G. Farbenindustrie A. G.

Manufacture of surface active compounds. No. 522,840. E. I. du Pont de Nemours & Co., Inc.

Compounding rubber. Nos. 522,843 to 522,845. Wingfoot Corporation.

Production of drying oils. No. 522,847. N. V. Industrielle Mij. voorheen Noury & Van der Lande.

Preparation of sterol derivatives. No. 522,909. Parke, Davis & Co.

Recovery of whale oil from glue waters and graxes from digestion of whale material. No. 522,925. Aktiebolaget Separator *et al.*

Manufacture of coated paper. Nos. 522,827 and 522,828. Champion Paper & Fibre Co.

Separation of mineral oils from paraffin. No. 522,871. Rheinmetall-Borsig A. G.

Separation of oil from gases and vapors. No. 522,879. S. Ziegler.

FRENCH PATENTS

Granted January 4 and Published January 11, 1940.

Improved process and apparatus for prospecting with electricity. No. 854,155. Sté. de Prospection Electrique Procédés Schlumberger.

Improvement in manufacture of multicellular glass. No. 854,179. S. A. des Manufactures des Glaces et Produits Chimiques de Saint-Gobain, Chauny et Cirey.

Water-insoluble azo dyes and process for their preparation. No. 854,156. Société Nationale de Matireres Colorants et Manufactures de Produits Chimiques du Nord Réunies Etablissements Kuhlmann.

Dye intermediates and process of preparation. No. 854,217. Ets. Kuhlmann.

Separation of gaseous mixtures. No. 854,225. F. Laurenty.

Process for preparation of objects from cellulose esters. No. 854,195. "Afg" Finanzierungs A. G.

Rubber printing *cliché*. No. 854,134. Imprimerie Crété.

Granted January 9 and Published January 18, 1940.

Improvement in the production of *B. Delbrücki* and its lactic acid in presence of sugars. No. 854,256. G. Boringhieri.

Improvement in producing gaseous atmospheres for heat treatment of metals. No. 854,298. Shell Marketing Co., Ltd.

Improvement in electric welding iron rods. No. 854,248. Cie. des Telephones Thomson-Houston.

Manufacture of safety glass. No. 854,280. Deutsche Celluloid-Fabrik A. G.

Apparatus for rapid cooling of glass sheets. No. 854,309. A. Quentin.

Preparation of cyclic ketones. No. 854,270. R. Robinson.

Preparation of nitration products of organic compounds. No. 854,297. N. V. de Bataafsche Petroleum Mij.

Dyes of the anthraquinone series and process of manufacture. No. 854,275. I. G. Farbenindustrie A. G.

Production of agglomerated active carbon. No. 854,313. Deutsche Gold und Silber Scheideanstalt.

Granted January 15 and Published January 25, 1940.

Process and apparatus for exploration. No. 854,329. Standard Oil Development Co.

Preparation of p-amino-phenyl sulfamides. No. 854,325. Deutsche Hydrierwerke A. G.

Manufacture of polynitrogenated dyes. No. 854,330. M. Szpilfogel.

Preparation of anthraquinone derivatives. No. 854,356. Ets. Kuhlmann.

Process and apparatus for improving the yield of soaps. No. 854,355. G. Lambert.

Process of producing liquid hydrocarbons from CO and H. No. 854,402. N. V. Internationale Koolwaterstoffen Synthese Mij.

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*Additions to previously granted patents; second number is that of the original.